JANUARY 6, 1945

THE LANCET

Offices: 7, ADAM STREET, ADELPHI, W.C.2.

Telegrams: LANCET, RAND, LONDON. **Telephone:** TEMPLE BAR 7228 and 7229.

No. I. OF VOL. I., 1945 LONDON, SATURDAY, JANUARY 6, 1945 Pp. 72—Price 1s.
No. 6332. VOL. CCXLVIII. Founded 1823. PUBLISHED WEEKLY. Registered as a Newspaper. Annual Subscription: Inland £2 2s. Abroad £2 10s.

We invite you to write to us

Paper restrictions make it difficult for us to keep doctors fully informed of our advances in chemotherapy.

We therefore cordially invite you to make use of our Medical Information Department whenever you feel that we may be of assistance.

MEDICAL SPECIALITIES Manufactured by MAY & BAKER LIMITED
Distributors PHARMACEUTICAL SPECIALITIES (MAY & BAKER) LIMITED DAGENHAM

7033

PHYSIOLOGY AND PATHOLOGY OF
THE HEART AND BLOOD-VESSELS
By J. PLESCH, M.D.
Formerly Professor of Internal Medicine in the Univ. of Berlin
"A well of information and provocative reading is manifest in this book . . . ought to be studied by everyone interested in the circulation and its disorders."—THE LANCET.
"This is an authoritative and thought-stimulating book by one who has devoted much time and thought to the subject."—BRITISH MEDICAL JOURNAL. 15s. net.
Oxford University Press

SECOND EDITION.
UROLOGY IN WOMEN.
A HANDBOOK OF URINARY DISEASES IN THE FEMALE SEX.
By E. CATHERINE LEWIS, M.S. (Lond.), F.R.C.S. (Eng.), Surgeon to the Royal Free Hospital; Surgeon and Urologist to the South London Hospital for Women.
¶ *"This book should certainly make and keep for itself a place in urological literature."*—LANCET.
Pp. viii + 100. With 4 Coloured Plates and 27 other Illustrations. Price 10s. 6d.; postage 5d.; abroad 9d.
Baillière, Tindall & Cox, 7 & 8, Henrietta-street, London, W.C.2.

SECOND EDITION IN PREPARATION.
DISEASES OF THE THYROID GLAND.
WITH SPECIAL REFERENCE TO THYROTOXICOSIS.
BY CECIL A. JOLL, M.S., B.Sc., F.R.C.S. (Eng.).
Crown 4to. Fully illustrated. £3 3s. net.
"No praise is too high or the author of this great book. It must be considered as the standard work on thyroid disease. Its pages summarise all that is known of this most interesting subject at the present day."—WEST LONDON MEDICAL JOURNAL.
William Heinemann (Medical Books) Ltd., 99, Great Russell-street, London, W.C.1.

CONTROL OF COMMON FEVERS.
By twenty-one Contributors. Arranged by Dr. ROBERT CRUICKSHANK and EDITOR OF THE LANCET.
Demy 8vo. 361 + vi pages. 33 Graphs. 38 Tables.
12s. 6d. net + 6d. postage.
The Lancet Limited, 7, Adam-street, Adelphi, London, W.C.2.

"Should be in the possession of every medical man."
—GLASGOW MEDICAL JOURNAL.
URINARY SURGERY
A Handbook for the General Practitioner,
By W. K. IRWIN, M.D., F.R.C.S.
Surgeon, St. Paul's Hospital for Genito-Urinary Diseases.
"Clearly written...furnishes the practitioner with information of great practical value in his everyday work."—BRIT. MED. JOUR.
SECOND EDITION. REVISED AND ENLARGED.
Price 10s. 6d. (postage 6d.)
Baillière, Tindall & Cox, 7 & 8, Henrietta-street, London, W.C.2.

SAUNDERS' BOOKS
TWO IMPORTANT
NEW EDITIONS
See Advertising Page 3

Free to the Medical Profession on request. Cloth bound Ed. 5s.
ARTIFICIAL LIMBS.
"SOLVITUR AMBULANDO"
A Symposium on Prosthetic Achievement.
Pp. 72, 37 Coloured Plates.
"I congratulate you on this interesting, instructive, and artistic production. I consider it to be a very great addition to my library."—M.B., Ch.B., F.R.C.S.
J. E. Hanger & Co., Ltd., 7, Roehampton House, Roehampton, S.W.15.

ENDOCRINE DISORDERS IN CHILDHOOD
AND ADOLESCENCE
By H. S. LE MARQUAND, M.D. (Lond.), M.R.C.P. (Lond.), Physician, Royal Berkshire Hospital;
and F. H. W. TOZER, M.D. (Lond.), M.R.C.P. (Lond.), Sometime Clinical Assistant, Royal Berkshire Hospital
Demy 8vo 298 + x pages Illustrated 15s. plus postage
Hodder & Stoughton Ltd., 20, Warwick-square, London, E.C.4.

NEW BOOKS AND NEW EDITIONS

A SHORT PRACTICE OF SURGERY
By **HAMILTON BAILEY**, F.R.C.S., and **R. J. McNEILL LOVE**, M.S., F.R.C.S. Sixth Edition. 922 Illus. Demy 8vo. **37s. 6d.** net; post. 9d.

THE SYMPTOMATIC DIAGNOSIS AND TREATMENT OF GYNÆCOLOGICAL DISORDERS
By **M. MOORE WHITE**, M.D. Lond., M.B., B.S., F.R.C.S. Eng., M.R.C.O.G. With 107 Illustrations. **16s.** net; postage 6d.

WHAT TO DO IN CASES OF POISONING
By **W. MURRELL**, M.D. Fifteenth Edition. Revised by H. G. BROADBRIDGE, M.B., B.S., M.R.C.S., L.R.C.P. F'cap 8vo. **8s.** net; postage 4d.

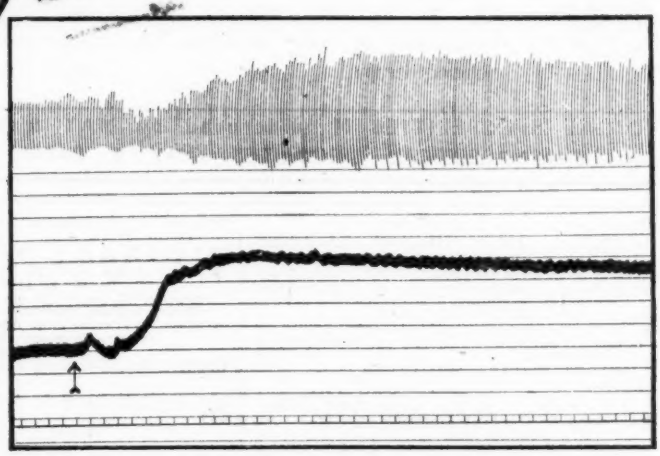
COMMON SKIN DISEASES
By **A. C. ROXBURGH**, M.D., F.R.C.P. Seventh Edition. With 8 Coloured Plates and 179 Illustrations in the Text. Demy 8vo. **18s.** net; postage 7d.

A PATHOLOGY OF THE EYE
By **EUGENE WOLFF**, M.B., B.S. Lond., F.R.C.S. Eng. Second Edition. 212 Illustrations. Crown 4to. **£2 2s.** net.

VARICOSE VEINS, HÆMORRHOIDS AND OTHER CONDITIONS: Their Treatment by Injection
By **R. ROWDEN FOOTE**, M.R.C.S., L.R.C.P., D.R.C.O.G. Demy 8vo. With 54 Illustrations. **12s. 6d.** net; postage 4d.

London: H. K. LEWIS & Co. Ltd., 136 Gower Street, W.C.1
Telephone: EUSton 4282 (5 lines)

Cardiac Catastrophe—Respiratory Failure



Action of Coramine on respiration (above) and blood pressure (below)

REGD. **CORAMINE** TRADE MARK

Brand of NIKETHAMIDE. B.P.

The most characteristic effects of Coramine are stimulation of the respiration and production of a sustained rise in the blood pressure.

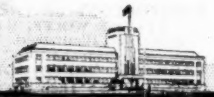
LARGE DOSES AT THE CRITICAL MOMENT
SMALL DOSES FOR PROLONGED TREATMENT

Supplies of Coramine, on which the pioneer work was done and on which the thousands of published reports are entirely based, are available to meet all requirements.

Ampoules and Liquid.

A BRITISH PRODUCT

Ciba LIMITED



THE LABORATORIES. HORSHAM, SUSSEX.

Telephone: Horsham 1234. *Telegrams:* Cibalabs, Horsham

JANUARY 6, 1945

THE LANCET

A JOURNAL OF BRITISH AND FOREIGN MEDICINE, SURGERY, OBSTETRICS, PHYSIOLOGY, CHEMISTRY, PHARMACOLOGY, PUBLIC HEALTH, AND NEWS

No. 6332 LONDON: SATURDAY, JANUARY 6, 1945 CCXLVIII

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT

ORIGINAL ARTICLES

Transfusion in Peace and War — Sir LIONEL WHITBY, FRCP.. 1

Brachial Pain from Herniation of Cervical Intervertebral Disc — Major F. A. ELLIOTT, MRCP, Major MICHAEL KREMER, FRCP (*illus.*)..... 4

Cavernous Sinus Thrombosis treated with Penicillin — D. F. JOHNSTONE, MRCS..... 9

Cavernous Sinus Thrombosis treated with Heparin and Sulphathiazole — S. MUNTARBHORN, MB..... 10

Abdominal Topography: Clinical Aspects — F. R. BROWN, FRCS, Surgeon-Lieut. GEORGE SMITH, MB (*diagrams*)..... 10

The Meningococcal-Adrenal Syndrome: Five Cases with One Recovery — J. MACDONALD HOLMES, MRCP, J. MACFARLANE COWAN, MB..... 13

Ureteric Calculus treated by Reversed Catheterisation — Surg. Lieut.-Comm. R. C. PERCIVAL, FRCS (*illus.*)..... 15

RECONSTRUCTION

Dentistry or Stomatology? — C. BOWDLER HENRY, MRCS, LDS (*diagram*)..... 26

REVIEWS OF BOOKS

The Sick African. Michael Gelfand, MRCP..... 18

War Surgery..... 18

Black's Medical Dictionary. J. D. Comrie, FRCPE. Editor: H. A. Clegg, FRCP..... 18

The Public Attitude towards Mental Disease and Urgent Reasons for Early Treatment. Horace Hill, MRCP..... 18

LEADING ARTICLES

WHO SHOULD FEED THE SICK?... 19

ARTERIAL ADVANCES..... 20

NHS OR NHI + ?..... 22

ANNOTATIONS

UNRRA and North-West Europe.. 22

Pregnancy Tests..... 23

Nuclear Tissue..... 23

Brachial Neuritis or Herniated Disc?..... 24

Stress Fractures of the First Rib.. 24

The Complete Blood Substitute.. 24

American Views on Chest Injuries 25

New Year Honours..... 25

Teaching Hospitals..... 25

SPECIAL ARTICLES

The Tasks of UNRRA..... 28

Medicine and the Law: Criticism of a Coroner..... 28

New Russian Medical Academy.. 29

New Year Honours 29

Canada 32

Infectious Disease in England and Wales..... 37

MEDICAL SOCIETIES

British Orthopædic Association: Vascularisation of Muscles..... 47

LETTERS TO THE EDITOR

In Which We Might Serve (Dr. Lindsey Batten and a Serving Officer)..... 33

Amœbiasis (Dr. J. G. Willmore).. 33

Transfusion Organisation (Dr. H. Thwaite) 34

Malignant Melanoma (Dr. J. F. Brailsford, Dr. F. Ellis)..... 34

Place of Iodine in Thyroid Medication (Dr. R. W. Carey)..... 35

Decisions in War-time (Sir E. Graham-Little, FRCP, MP)..... 35

Smallpox and Vaccination (Major W. A. Oliver, RAMC)..... 35

Hospital Physicists after the War (British Institute of Radiology, Faculty of Radiologists)..... 36

PARLIAMENT

On the Floor of the House..... 31

From the Press Gallery: Welfare of British Forces in the Far East 31

Question Time: Expenditure on Medical Research — Advisory Council for the Employment of the Disabled — Plans for Women Medical Students — Maternity Accommodation — War-time Nurseries — Health Services in Ethiopia — Repairs to Hearing-aids..... 31

ON ACTIVE SERVICE

Awards — Memoir: Captain F. A. S. Austen (*portrait*)..... 36

IN ENGLAND NOW

A Running Commentary by Peripatetic Correspondents.... 30

NOTES AND NEWS

Manson of Tropical Medicine..... 37

Memorial to the Bland-Suttons (*illus.*)..... 37

A Hundred Years of Books..... 37

University of Liverpool..... 38

Royal College of Surgeons of Edinburgh..... 38

Medical Society of London..... 38

Association of Voluntary Teaching Hospitals of Great Britain..... 38

Society of MOH 37

British Dental Association.... 38

Society of Thoracic Surgeons of Great Britain and Ireland..... 38

Priority Rations for Invalids..... 38

Midge Control in Scotland..... 16

Welfare Equipment Development Association..... 16

Nutrition in the Colonies..... 27

St. Thomas's Hospital..... 38

Hygienists for the Continent.... 38

The Place of Science in Industry.. 38

Births, Marriages, and Deaths ... 38

THE LONDON AND COUNTIES
MEDICAL PROTECTION SOCIETY, Ltd.

President: SIR ERNEST ROCK CARLING, F.R.C.S., F.F.R.

Members receive UNLIMITED INDEMNITY (subject to the Articles of Association) against damages and costs in cases undertaken on their behalf and advice and assistance in all matters of professional difficulty.

The estate of a deceased member is similarly protected.

Assets exceed £100,000

Annual Subscription £1

Entrance Fee 10s.
(REMITTED TO RECENTLY QUALIFIED PRACTITIONERS)

Full particulars and application form from:—
THE SECRETARY, VICTORY HOUSE, LEICESTER SQUARE, W.C.2. Gerrard 4553, 4814.

Some new 1945 books from Heinemann

*

The Papworth Families A 25 Years' Survey By E M BRIEGER MD
with an Introduction by Sir ARTHUR MacNALTY KCB MD FRCP and a Foreword by L B STOTT MB ChB DPH

The long-awaited account planned by Sir Pendrill Varrier-Jones. Part I, Historical Introduction; II, Village Settlement Survey; III, Epidemiological Interpretation; IV, Pathological Implications. Appendix: Case Histories, X-Ray Films, Facsimile Reproductions of Tables, Standard Works with Abstracts, Bibliographies, References, Index — abt 50s

Anatomical Atlas of Orthopædic Operations By L S MICHAELIS MD

Concise descriptions with unusually clear pictures, in line, tone and three-colour, of well-tried procedures. The incisions and approaches are those used by the Orthopædic Unit of Botleys Park War Hospital — abt 42s

Outlines of Physical Methods in Medicine By G D KERSLEY MD FRCP
with a Foreword by Brig FRANK HOWITT CVO MD FRCP

A short summary for physiotherapists, occupational therapists and all who are concerned with rehabilitation and industrial medicine, compiled by an authority with wide experience in the Services and in civil life — *6 diagrams* — 8s 6d

The Intelligent Parents' Manual By FLORENCE POWDERMAKER MD and LOUISE GRIMSE
English edition prepared and with Introduction by Dr. MAURICE NEWFIELD

A comprehensive, simply-written book which stresses practical matters but gives some theory. Invaluable for doctors, teachers, welfare workers, etc. — 10s 6d

Active Psychotherapy By ALEXANDER HERZBERG MD PhD (Berlin)

Based on 20 years' experience, the author presents his original methods of psychological treatments of neuroses and perversions. Case histories are provided. — abt 15s

V D Lectures for Nurses By REYNOLD H BOYD MB ChB FRCSE

An authoritative and practical summary of methods of treatment by the Consulting Venereologist to the Essex County Hospitals — 2s

What is Tuberculosis? By MILOSH SEKULICH MD (Belgrade)

Its prevention and control discussed, for the use of medical relief and health reconstruction workers, etc. (In association with RESEARCH BOOKS LTD) — 3s 6d

*

Some new editions and reprints for 1945

The Vitamins in Medicine — 2nd edn
by F BICKNELL and F PRESCOTT *Revised and enlarged* — 50s

War Surgery — 3rd edn
by J TRUETA *Revised and with important new material* — 42s

Complete Outline of Fractures — 2nd edn
by J G BONNIN *Completely revised and many new illustrations* — 30s

Introduction to Biochemistry — 3rd edn
by W R FEARON *Revised throughout and enlarged* — 21s

The Rheumatic Diseases — 2nd edn
by G D KERSLEY *Completely rewritten and reset* — 15s

Hermaphroditos — 2nd edn
by A P CAWADIAS *Revised and enlarged* — 15s

Clinical Electrocardiography — 2nd edn
by D SCHERF and L J BOYD *Revised throughout* — 25s

Textbook of Bacteriology — (3rd ptg) 4th edn
by R W FAIRBROTHER — 17s 6d

Textbook of Histology — (2nd ptg) 3rd edn
by E E HEWER — 17s 6d

Endocrine Man — 2nd impression
by L R BROSTER — 12s 6d

Revelation of Childbirth — 4th printing
by G DICK READ — 21s

Studies on Immunisation — 2nd series
by Sir ALMROTH WRIGHT — 25s

Sex in Relation to Society — 2nd edn
by HAVELOCK ELLIS — 21s

Positioning in Radiography — 4th edn
by K C CLARK — 75s

New and recent books from America

Management of Neurosyphilis — 25s
by BERNHARD DATTNER MD JURD

Artificial Pneumothorax — 21s
by T N RAFFERTY MD

Psychology of Women — 21s
by HELENE DEUTSCH MD

The Electrocardiogram — 42s
by LOUIS H SIGLER MD FACP

Rheumatic Fever — 21s
by LEOPOLD LICHTWITZ MD

Rebel Without a Cause — 21s
by ROBERT LINDNER PhD

WILLIAM HEINEMANN • MEDICAL BOOKS • LTD
99 GREAT RUSSELL STREET • LONDON • WC1

Fifth Edition

CHRISTOPHER'S MINOR SURGERY

Features of the Revision . . .

This *Fifth Edition* is the result of a sweeping revision in which many parts of the book were completely rewritten.

It includes the improvements in diagnosis and treatment of minor surgical conditions that have come about as a result of the War.

Takes up minor surgical diseases and conditions of the entire body.

The discussions of *Wound Healing and Wound Treatment* have been entirely rewritten, with particular emphasis on local and systemic uses of the sulphonamides and the plaster cast treatment.

Penicillin is discussed, its use and its limitations given.

The section on *Burns* has been comprehensively revised to make it one of the most complete of such discussions. It now takes up administration of blood plasma, use of non-adherent pressure dressings, use of proteins, use of tetanus antitoxin and sulpha drugs, etc.

There is an entirely *new chapter on Pre- and Post-operative Care*, including shock, dehydration, vitamin deficiency, water balance, electrolyte requirements, protein requirements and treatment of hypoproteinæmia with amino-acids, postoperative pulmonary complications, use of heparin and dicumarol in postoperative thrombosis and embolism, etc., etc.

Includes latest management of *Fractures*, including Orr-Trueta treatment of compound fractures.

There is a full chapter on "The Surgical Intern."

By FREDERICK CHRISTOPHER, M.D., F.A.C.S., Associate Professor of Surgery at Northwestern University Medical School. 1006 pages, 6"×9", with nearly 1000 illustrations on 575 figures. 60s.

Twentieth Edition

AMERICAN ILLUSTRATED MEDICAL DICTIONARY

With over 2500 New Words

Hundreds of new terms have been added to the vocabulary of medicine in the past three years. Because of its encyclopædic character, the *New (20th) Edition of the American Illustrated Medical Dictionary* will help you keep up with these important new words and facts.

1668 pages, 6"×9", with 885 illustrations, over 100 in colours, and more than 100 elaborate tables. Plain 42s.; Thumb-indexed 45s.

The LANCET says:—

"*. . . We welcome the complete revision which has added new words in every department of medicine (especially war medicine and surgery) and names of new synthetic drugs, while bringing the terminology into conformity with the A.M.A.'s 'Standard Nomenclature.' Scholarly, accurate and comprehensive it remains . . . .*"

The BRITISH MEDICAL JOURNAL says:—

"*. . . In these days medical terms spring up like mushrooms in the night, and one of the great merits of Dorland's dictionary is the speed with which new words are incorporated in successive editions.*"

W. B. SAUNDERS COMPANY, Ltd., 7, Grape Street, London, W.C.2

HAMISH HAMILTON

JUST PUBLISHED

DEEP MASSAGE AND MANIPULATION ILLUSTRATED

By **JAMES CYRIAX**, M.D., B.Ch.

Pp. x+242 98 Plates **15s.** net

The long-awaited successor to the author's *Massage, Manipulation and Local Anæsthesia*, now in its 5th war-time impression.

OPHTHALMOLOGY FOR MEDICAL OFFICERS

By **Lt.-Col. B. W. RYCROFT**, M.D., D.O.M.S.; F.R.C.S.

Pp. viii+96 59 Illustrations **10s. 6d.** net

A timely manual on eye diseases and wounds in active service conditions.

BIOMICROSCOPY OF THE EYE

By **M. L. BERLINER**, M.D.

Pp. xii+709 512 Illustrations, including 40 pages of eight-colour plates **84s.** net

"... one of those rare books that profoundly influence clinical practice. Here, for the first time in English, is an adequate presentation not only of the technique of slit-lamp microscopy but also of slit-lamp appearances . . ."—*British Medical Journal.*

HUMAN CONSTITUTION IN CLINICAL MEDICINE

By **GEORGE DRAPER**, M.D., **C. W. DUPERTUIS**, Ph.D., and **J. L. CAUGHEY**, M.D.

Pp. xi+273 29 Illustrations **21s.** net

". . . should be read by the student . . . ; by the G.P. who will find much of his subconscious knowledge illuminated and sanctified by science ; by the bright young M.R.C.P., . . . ; and by every specialist who engrossed with one viscus is in danger of forgetting the proximity of others."—*The Lancet.*

PSYCHOSOMATIC DIAGNOSIS

By **FLANDERS DUNBAR**, M.D.

Pp. xix+742 **37s. 6d.** net

An authoritative work on diagnosis and treatment, based on an evaluation of psychological and organic mechanisms of disease.

JUST PUBLISHED

INFANT AND CHILD IN THE CULTURE OF TODAY

By **ARNOLD GESELL**, M.D., and **FRANCIS L. ILG**, M.D.

Pp. xii+399 **15s.** net

A factual account of normal progress up to five years old, with specific techniques to secure the fullest development of innate abilities.

READY SHORTLY

INTRAVENOUS ANÆSTHESIA

By **R. CHARLES ADAMS**, M.D., C.M., M.S.

Pp. xiv+663 75 Illustrations and 34 Tables **60s.** net

Deals fully with all the agents used for the purpose, and with the methods, indications, hazards and results of their administration.

PHYSICAL MEDICINE IN GENERAL PRACTICE

By **WILLIAM BIERMAN**, M.D.

Pp. xi+654 310 Illustrations **37s. 6d.** net

A practical work for general practitioners and physiotherapists, mainly on the procedures that enter into everyday practice.

SECRETORY MECHANISM OF THE DIGESTIVE GLANDS

By **B. P. BABKIN**, M.D., D.Sc., LL.D., F.R.S.C.

Pp. xix+900 220 Illustrations **63s.** net

An authoritative discussion of the secretory processes in their physiological and clinical aspects. Includes much new material.

PHYSICAL FOUNDATIONS OF RADIOLOGY

By **OTTO GLASSER**, Ph.D., **EDITH H. QUIMBY**, Sc.D., **LAURISTON TAYLOR**, Ph.D., and **J. L. WEATHERWAX**, M.A.

Pp. x+426 95 Illustrations and 55 Tables **25s.** net

An up-to-date survey of the whole field for students of radiology and practising radiologists.

HAMISH HAMILTON MEDICAL BOOKS, 90, Great Russell St., London, W.C.1

OF PROVEN MERIT

"WANDER" BRAND

Malt Extract & Cod Liver Oil

THE therapeutic qualities and effectiveness of "Wander" Brand Malt Extract and Cod Liver Oil have been demonstrated by practical experience over many years. It is a preparation of outstanding pharmaceutical excellence.

When the physician prescribes "Wander" Malt Extract and Cod Liver Oil he can be assured of a preparation which possesses the natural vitamin content of A and D.

The cod liver oil used is the best obtainable and is standardised with regard to its vitamin content. The malt extract is specially prepared by the manufacturers, A. Wander Ltd., who are probably the world's largest producers of medicinal malt extract, upon the manufacture of which there are no greater authorities.

The makers have also specialised for many years in the combination of malt extract and cod liver oil, and the proportions of these two ingredients which are combined in "Wander" Brand are those most generally required by the medical profession.

The cod liver oil is incorporated with the malt extract by special processes. This results in a preparation pre-eminently acceptable to the patient both in appearance and taste.

Strict control by the "Wander" Laboratories ensures that the high reputation for quality which this preparation enjoys is fully maintained. Thus "Wander" Brand Malt Extract and Cod Liver Oil is a product on which the physician can rely confidently, knowing that it cannot be surpassed.

A. WANDER LTD., 5 and 7, Albert Hall Mansions, London, S.W.7

Laboratories, Works and Farms: King's Langley, Herts M303

A MEDICAL & SCIENTIFIC CENTRE

FOR BOOKS, MEDICAL STATIONERY, OSTEOLOGY,
CHARTS, ANATOMICAL WALL DIAGRAMS, Etc.

H. K. LEWIS & Co. Ltd. (Established 1844)

136
GOWER ST.
LONDON, W.C.1

ONE HUNDRED
YEARS

Founded in 1844 by Henry King Lewis, this year sees the completion of a century of service. A short history of the business is in the press, from its small beginnings in 15 Gower Street North (as No. 136 was then known), its extension to 24 Gower Place, and the building of the present premises.

The frequent expressions of good feeling amongst clients in all parts of the world are a source of deep satisfaction, and bring a sense of responsibility for the preservation of the tradition of service which has brought the business through its first century.

VISITORS from OVERSEAS or the PROVINCES, OFFICERS in the FORCES, Medical Librarians, Hospital Officials, are invited to inspect the large selection of books, medical and scientific, always available.

LEWIS'S POSTAL SERVICE.—This Department gives careful attention to Orders and Inquiries received from the Provinces and Abroad ; allowance must be made for the longer time required for inward and outward mails, as well as for staff difficulties and shortage and irregularity of supplies.

FOR MEDICAL STUDENTS.—Large stock of Text Books

STUDENTS' STATIONERY. Note-books, loose-leaf or bound, Writing-pads, fountain pens, pencils, plain and coloured **College Shields.** All the principal Schools

MEDICAL AND SCIENTIFIC LENDING LIBRARY

ANNUAL SUBSCRIPTION FROM ONE GUINEA *DETAILED PROSPECTUS ON APPLICATION*

SPECIAL TERMS TO STUDENTS AT THE LONDON AND PROVINCIAL MEDICAL SCHOOLS

SECOND-HAND BOOK DEPARTMENT, 140 GOWER STREET

Large Stock of Second-hand Standard Works of all dates
OUT-OF-PRINT AND EARLY MEDICAL BOOKS A SPECIALITY
ITEMS NOT IN STOCK SOUGHT FOR AND REPORTED FREE OF CHARGE
Please state interests when writing

Postal Address for all Departments:

H. K. LEWIS & Co. Ltd., 136 Gower Street, LONDON, W.C.1
Business hours: 9 a.m. to 5 p.m. (4 p.m. to Jan. 13); Saturday to 1 p.m. Telephone: EUSton 4282 (5 lines)

Now Published

SURGERY

A Textbook for Students

By

CHARLES AUBREY PANNETT

B.Sc., M.D., F.R.C.S.

Professor of Surgery, University of London; Director of the Surgical Unit, St. Mary's Hospital, London; sometime member of the Court of Examiners R.C.S. Eng., and Examiner to the Universities of London, Manchester, and Cardiff.

Extensively illustrated throughout text
740 + xii Price 35s. net

The book gives a short account of general surgery. Due to the careful selection of proved methods it is unencumbered by obsolete recommendations; nor is it burdened by discussions of controversial points in pathology or details of operative technique unnecessary for the undergraduate student. Yet always the indications are clearly stated. Whilst written primarily for the undergraduate, the information given is full enough to form a basis of knowledge for students of advanced surgery.

HODDER & STOUGHTON LTD.
20, Warwick Square, London, E.C.4

SECOND EDITION *SHORTLY AVAILABLE*

INTRODUCTION TO

DISEASES OF THE CHEST

By

JAMES MAXWELL,

M.D. (Lond.), F.R.C.P. (Lond.),

Assistant Physician and Demonstrator of Practical Medicine, St. Bartholomew's Hospital; Physician, Royal Chest Hospital; Consulting Physician, Royal National Sanatorium, Bournemouth

HODDER & STOUGHTON LTD
20, WARWICK SQUARE E.C.4

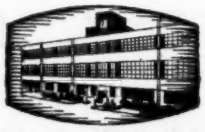
INFANT NUTRITION

VITAMIN D

NUTRITIONAL surveys under wartime conditions have confirmed the wisdom of fortification of Infant Foods with Vitamin D. The published results have also indicated that there is a minority of infants who do not fully respond to quantities of Vitamin D hitherto regarded as generally sufficient.

The facts elicited by the investigations have received the most serious attention of leading authorities on nutrition, and in conformity with a request we are now co-operating in safeguarding all infants by increasing the Vitamin D in COW & GATE MILK FOOD to 320 international units per oz. (800 i.u. per reconstituted pint).

We have much pleasure in co-operating in this manner in pursuance of our long-established policy of applying the latest advances in the knowledge of infant nutrition.



©342

COW & GATE LTD · GUILDFORD · SURREY

J.&A.C. ★ SUCCESSES of 1944 ★ J.&A.C.

RECENT ADVANCES IN ENDOCRINOLOGY

By A. T. CAMERON, M.A., D.Sc., F.R.I.C., F.R.S.C., Professor of Biochemistry, Faculty of Medicine, University of Manitoba. *Fifth Edition.* 73 Figures, including 3 Plates. **18s.**

HALE-WHITE'S MATERIA MEDICA, PHARMACY, PHARMACOLOGY AND THERAPEUTICS

Twenty-sixth Edition. Revised by A. H. DOUTHWAITE, M.D., F.R.C.P., Physician, Guy's Hospital. **14s.**

TROPICAL MEDICINE

By SIR LEONARD ROGERS, *K.C.S.I., C.I.E.*, M.D., F.R.C.P., F.R.C.S., F.R.S., and SIR JOHN W. D. MEGAW, *K.C.I.E.*, M.B., late Medical Advisers, India Office. *Fifth Edition.* 2 Coloured Plates and 87 Text-figures. **21s.**

ELEMENTARY ANATOMY AND PHYSIOLOGY

By J. WHILLIS, M.D., M.S., F.R.C.S., University Reader in Anatomy, Guy's Hospital Medical School. *Second Edition.* 93 Illustrations. **15s.**

SYNOPSIS OF HYGIENE (Jameson & Parkinson)

Eighth Edition. By G. S. PARKINSON, *D.S.O.*, D.P.H., Brig., R.A.M.C., Public Health Department, London School of Hygiene and Tropical Medicine. 16 Illustrations. **25s.**

RECENT ADVANCES IN ANÆSTHESIA AND ANALGESIA Including Oxygen Therapy

By C. LANGTON HEWER, M.B., B.S., D.A., Senior Anæsthetist, St. Bartholomew's Hospital. *Fifth Edition.* 141 Illustrations. **18s.**

ANTENATAL AND POSTNATAL CARE

By F. J. BROWNE, M.D., F.R.C.S. Edin., Professor of Obstetrics and Gynæcology, University of London. *Fifth Edition.* 84 Illustrations. **24s.**

MIDWIFERY FOR NURSES

By A. W. BOURNE, F.R.C.S., F.R.C.O.G., Obstetric Surgeon, St. Mary's Hospital. *Third Edition.* 111 Illustrations. **7s. 6d.**

ELEMENTARY HYGIENE FOR NURSES

By H. C. R. DARLING, M.D., F.R.C.S., Surgeon, Prince Henry Hospital and New South Wales Hospital, Sydney, New South Wales. *Eighth Edition.* 69 Illustrations. **6s.**

MEDICAL BACTERIOLOGY: Descriptive and Applied Including Elementary Helminthology

By L. E. H. WHITBY, *C.V.O.*, M.D., F.R.C.P., D.P.H., Bacteriologist, The Bland-Sutton Institute of Pathology, The Middlesex Hospital. *Fourth Edition.* 81 Illustrations. **14s.**

THE EXAMINATION OF WATERS AND WATER SUPPLIES (Thresh, Beale and Suckling)

Reprint of Fifth Edition. By E. V. SUCKLING, M.B., D.P.H., Consulting Analyst to various Water Authorities. 63 Illustrations. **60s.**

SURGICAL ANATOMY

By GRANT MASSIE, M.S., F.R.C.S., Surgeon, Guy's Hospital. *Reprint of Fourth Edition.* 158 Illustrations. **21s.**

FORENSIC MEDICINE

By SYDNEY SMITH, M.D., F.R.C.P., Regius Professor of Forensic Medicine, University of Edinburgh. *Reprint of Eighth Edition.* 179 Illustrations. **28s.**

MEDICINE: Essentials for Practitioners and Students

By G. E. BEAUMONT, D.M., F.R.C.P., D.P.H., Physician to The Middlesex Hospital. *Reprint of Fourth Edition.* 71 Illustrations. **28s.**

J. & A. CHURCHILL Ltd. 104 Gloucester Place London W.1

Nutritional safety in weaning

As the first solid supplement to the infant's diet, 'Farex' offers a greater measure of nutritional safety than any single cereal. 'Farex' is a mixed cereal food providing a high proportion of protein. Its fortified mineral content is of particular value at a time when calcium and phosphorus are in urgent demand for bone production, and the natural store of iron is becoming exhausted. 'Farex' is acceptable to the infant and does not tax limited digestive abilities. Being pre-cooked, a meal can be prepared with ease and so offers a considerable saving of time for the already overworked mother.

COMPOSITION

Fat	2.5	per cent.
Protein	13.4	,, ,,
Carbohydrate	73.5	,, ,,
Mineral matter	3.6	,, ,,
Fibre	0.5	,, ,,
Moisture	6.5	,, ,,
Iron	4	mg. per oz.
Calcium	212	mg. ,, ,,
Phosphorus	112	mg. ,, ,,
Vitamin D	625	i.u. ,, ,,
Calorific value	110	,, ,,

PRODUCT OF THE GLAXO LABORATORIES

FAREX

NEW 'EXAMEN' *The anti-anaemic activity of the new 'Examen' is increased per cc. to 3 or 4 times that of the original 'Examen,' without loss of purity. This makes possible a new small standard dose of only 1 cc. and a reduction in cost of treatment. Particulars on request.*

GLAXO LABORATORIES LTD., GREENFORD, MIDDLESEX. BYRon 3434

PROTECTING YOUNG TEETH

In recommending a dentifrice for children's use, three major factors will influence your selection.

(a) It is of obvious importance that the cleansing agents employed should be completely free of abrasive action.

(b) Powerful astringents are contra-indicated, as these may irritate and inflame the gum membrane.

(c) The essential oils incorporated must have a pleasant appeal to the young patient.

In all these respects, Phillips' Dental Magnesia presents a dentifrice which can, with confidence, be recommended to children of all ages. Completely free from harmful ingredients, it possesses a unique flavour which makes a very strong appeal to the young. Phillips' Dental Magnesia has, moreover, the outstanding property of inhibiting oral acidity by reason of the 'Milk of Magnesia'★ content, a very real advantage in protecting young teeth.

Phillips' Dental Magnesia (Regd.)

THE CHAS. H. PHILLIPS CHEMICAL CO., LTD. 179, ACTON VALE, LONDON, W.3.

★ *'Milk of Magnesia' is the trade mark of Phillips' preparation of magnesia.*

Prompt Reticulocyte Response and Effective Maintenance in
PERNICIOUS ANEMIA

PROETHRON

● It is recognised that parenteral administration of liver in pernicious anæmia cases produces a faster reticulocyte response and aids in a more adequate maintenance.

For these reasons, PROETHRON (Armour Liver Liquid) deserves consideration. This preparation is carefully processed from the livers of young, healthy, Government-inspected animals in such a way as to protect the blood regenerating active constituents to the maximum. It is free from protein and toxic amines.

Telephone : MONARCH 8044

THE Armour Laboratories
ARMOUR AND COMPANY LTD.

Telegrams : "ARMOSATA-PHONE" LONDON

THORNTON HOUSE, FINSBURY SQUARE, LONDON, E.C.2

A HYPERBARIC SPINAL ANÆSTHETIC

Many references have been published in American journals on the use of p-butyl-aminobenzoyl dimethyl amino ethanol (Amethocaine Hydrochloride) as a Spinal Anæsthetic, especially when used in the form of a hyperbaric solution. This combination has rapidly become one of the most popular anæsthetic agents, and to quote the "New England Journal of Medicine," Dec. 7th, 1939, provides unequalled anæsthesia for routine use.

Spinal "D" is a hyperbaric solution of Amethocaine Hydrochloride and is indicated for spinal anæsthesia in operations below the level of the diaphragm.

LITERATURE ON APPLICATION TO

DUNCAN, FLOCKHART & CO.

EDINBURGH LONDON

EVARSAN

Neoarsphenamine (Evans)

Progressive research at The Evans Biological Institute has yielded a highly purified neoarsphenamine of exceptional quality.

Batch Uniformity

Evarsan shows uniformity in chemical and biological properties from batch to batch.

High Therapeutic Activity

Despite low toxicity, therapeutic activity is maintained at a high level and for most batches is about fifteen per cent. higher than the official minimum requirements.

Low Toxicity

Animal tests show that the toxicity is at least nineteen per cent. lower than the official minimum requirements for neoarsphenamine.

Stability

Evarsan exhibits a high degree of stability and does not increase in toxicity after prolonged storage.

Manufactured and tested under U.K. Manufacturing Licence No. 18.

Approved by the Ministry of Health for use in Venereal Disease Clinics.

Full details of the use of Evarsan and other Evans products in the treatment of syphilis are contained in a handy pocket-book "The Treatment of Syphilis" free on request to:
Liverpool: - - - - Home Medical Dept., Speke, Liverpool, 19.
London: - - - - Home Medical Dept., Bartholomew Close, E.C.1.

MEDICAL EVANS PRODUCTS

Made in England by

EVANS SONS LESCHER & WEBB LTD.

Marc

ABNORMAL TIMES
mean
ABNORMAL ROUTINES

As the war effort is hitting full stride, it brings with it many dislocations of civilian habits which affect the normal routines of normal times.

Not the least important of these disturbing effects is irregularity of bowel action with its resultant symptom complex, loss of appetite, depression, fatigue, listlessness — all of which tend to lower bodily and mental efficiency.

The physician who, in these circumstances, turns to Agarol does so with the assurance that his patients will like this easy-to-take, gentle yet dependable acting, mineral oil evacuant. It contains sufficient dose of phenolphthalein to encourage peristalsis and secure complete bowel evacuation.

AGAROL

WILLIAM R. WARNER & CO. LTD., 150-158, KENSINGTON HIGH STREET, LONDON, W.8
(Wartime Address)

Supplementary feeding in pregnancy

The value of the inclusion of Marmite in the diets of pregnant women is well recognised. Confirmatory evidence of its somewhat special use in this connection is given in a paper in which the author concludes that "supplementary feeding with Marmite, or a similar yeast extract, during pregnancy results in a statistically significant reduction in the stillbirth-rate and neonatal mortality." (*Lancet*, 1944, i, 208.)

MARMITE

yeast extract

contains vitamins of the B_2 complex

RIBOFLAVIN (vitamin B_2) – – – 1·5 mg. per oz.
NIACIN (nicotinic acid) – – – 16·5 mg. per oz.

Jars: 1-oz., 6d.; 2-oz., 10d.; 4-oz., 1s. 6d.; 8-oz., 2s. 6d.; 16-oz., 4s. 6d.

THE MARMITE FOOD EXTRACT CO. LTD., 35 Seething Lane, LONDON, E.C.3 451

BROMETHOL B.D.H.

The Basal Anæsthetic for Rectal Injection

The use of Bromethol B.D.H. constitutes a practically ideal form of premedication for anæsthesia. Its advantages, which are obvious at every stage from administration in the ward until the post-operative recovery from the anæsthesia, can be summarised as follows:—

1 Preparation and administration are simple

2 Apprehension is eliminated and amnesia is complete for the patient

3 A minimum of anæsthetic (nitrous oxide and oxygen, ether or procaine — local, regional or splanchnic infiltration) is required to produce safe and satisfactory anæsthesia with adequate relaxation

4 Return to consciousness is gradual and free from undesirable symptoms such as nausea and vomiting

5 Accuracy of dosage and continuous and close watching of the patient are not so vital as they are with deep inhalation anæsthesia or intravenous barbiturate anæsthesia.

Details of dosage and other relevant information on request

THE BRITISH DRUG HOUSES LTD. LONDON N.1

Eth/E/69

Shortens the course of infection and averts sequelæ to colds

'SULFEX'

(A *suspension* of micro-crystalline ('Mickraform') sulphathiazole, 5%, in an isotonic solution of 'Paredrinex,' 1%)

The intranasal instillation of 'Sulfex'* has proved strikingly effective, both with adults and children, in the treatment of nasal and sinus infections—especially those secondary to common colds. Nasopharyngeal sore throat often responds to 'Sulfex' within twenty-four hours. The suspension has the following advantages:—

(1) **Prolonged Bacteriostasis.** The 'Mickraform'* crystals of free sulphathiazole are not quickly washed away, but form an even frosting over the nasal mucosa, thus providing prolonged bacteriostasis precisely where it is needed most.

(2) **Non-Stimulating Vasoconstriction.** While 'Paredrinex'* exerts a rapid and complete shrinking action, it does not produce central nervous side-effects such as restlessness and insomnia.

(3) **Therapeutically Ideal pH (5.5 to 6.5).** 'Sulfex' does not cause stinging or irritation. Its slightly acid pH range is identical with that of normal nasal secretions.

Available, on prescription only, in 1-oz. bottles with dropper. Price 5/1 including P.T.

Samples and further details on signed request of physicians.

MENLEY & JAMES LIMITED, 123 COLDHARBOUR LANE, LONDON, S.E. 5

For Smith, Kline & French Laboratories, owners of the Trade Marks*

PS2½

In Childhood... and Adolescence

In childhood and adolescence the total hæmoglobin increases with growth, and the store of iron in the body must be maintained proportionately. It is acknowledged that this added need for iron may be difficult to obtain from the food and, consequently, must be supplied as medication. Excellent results are offered by the use of specially prepared iron (easily assimilated ferrous sulphate) incorporated in 'Plastules.'

'PLASTULES'

BRAND *Hæmatinic Compound* REGD

For Anaemia and Debility

In two varieties: PLAIN · with HOG'S STOMACH

Look at the Blood

JOHN WYETH & BROTHER LIMITED, (Sole distributors for PETROLAGAR LABORATORIES LTD.) Clifton House, Euston Rd, London, N.W.1.

12

OESTROFORM

Trade Mark

The Natural Œstrogen

The use of Oestroform still remains the most satisfactory method of controlling the symptoms of the menopause, since it provokes no toxic reaction as the synthetic œstrogens may do; further, as Oestroform is administered by injection, all stages of treatment are under the practitioner's supervision.

Oestroform is indicated also in genital infantilism and delayed puberty, in primary and secondary amenorrhœa, in sterility and dysmenorrhœa due to uterine hypoplasia, in pruritus and kraurosis vulvæ and for the induction of labour and for the inhibition of lactation.

Details of dosage and other relevant information on request

THE BRITISH DRUG HOUSES LTD. LONDON N.1

Telephone: Clerkenwell 3000. Telegrams: Tetradome Telex London

SHor/E/136

PETHIDINE HYDROCHLORIDE
— BOOTS —

ANALGESIC AND ANTISPASMODIC

Pethidine Hydrochloride is a new synthetic compound of proved value as an analgesic in neurological conditions and for the relief of pain associated with spasm. Recent clinical results show that it is a useful obstetric analgesic when administered orally during the early stages of labour or by injection either alone or with scopolamine during labour.

Ampoules of 100 mg.		Tablets of 25 mg.		Tablets of 50 mg.	
Box of 12	10/8	Bottle of 25	3/3½	Bottle of 25	6/1
Box of 100	78/11	Bottle of 100	11/11	Bottle of 100	22/9
		Bottle of 500	53/8	Bottle of 500	103/2

Prices net

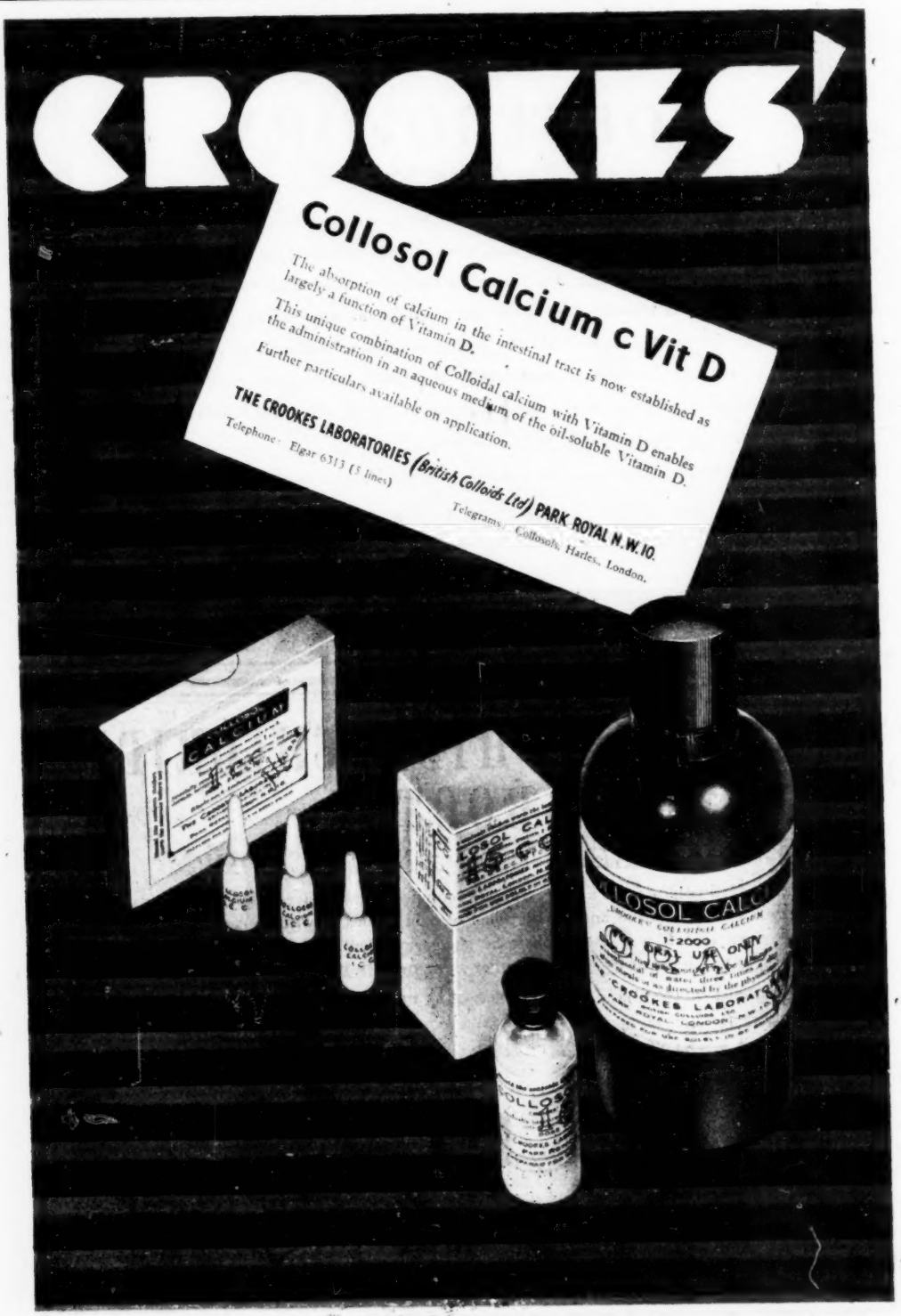
Boots

Further information gladly sent on request to the

MEDICAL DEPARTMENT

BOOTS PURE DRUG COMPANY LIMITED NOTTINGHAM

B952-63A


CROOKES'
Collosol Calcium c Vit D
The absorption of calcium in the intestinal tract is now established as largely a function of Vitamin D.
This unique combination of Colloidal calcium with Vitamin D enables the administration in an aqueous medium of the oil-soluble Vitamin D.
Further particulars available on application.
THE CROOKES LABORATORIES (British Colloids Ltd) PARK ROYAL N.W.10.
Telephone: Elgar 6313 (5 lines)
Telegrams: Colloseb, Harles., London.
COLLOSOL CALCIUM
1 in 2000
FOR USE ONLY
THE CROOKES LABORATORIES
PARK ROYAL LONDON N.W.10

the indication for 'ARTHRYTIN'

TRADE MARK BRAND

calciodoxyl benzoate

'ARTHRYTIN' brand calciodoxyl benzoate is indicated in the treatment of rheumatoid arthritis, and it may be helpful in the relief of symptoms in osteo-arthritis. The drug is also useful in the treatment of Leg Ulcers such as those associated with Varix, Buerger's disease, and faulty circulation from various causes such as acute anterior poliomyelitis.

'ARTHRYTIN' is particularly useful when given in courses alternately with courses of 'Myocrisin' brand sodium aurothiomalate in the treatment of rheumatoid arthritis.

SUPPLIES :—

Tablets of 0.5 gramme.
Containers of 25 and 100

OUR MEDICAL INFORMATION DEPARTMENT WILL BE GLAD TO SUPPLY YOU WITH FURTHER DETAILS.

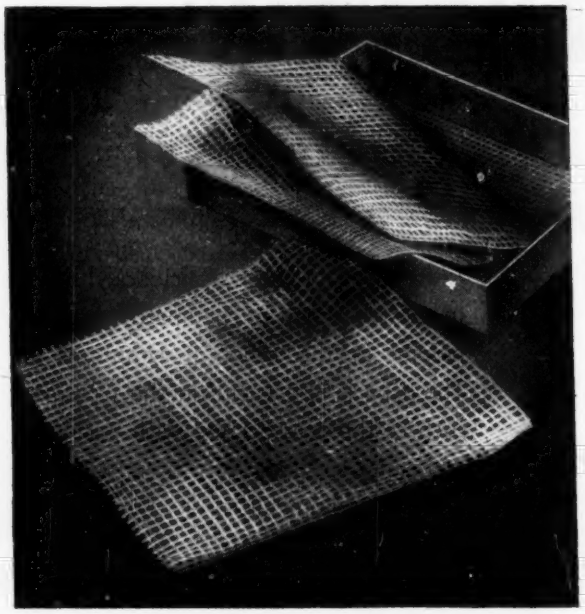
TELEPHONE : ILFord 3060.
EXTENSIONS: 61 and 83.

MANUFACTURED BY
MAY & BAKER LTD.

DISTRIBUTORS

PHARMACEUTICAL SPECIALITIES (MAY & BAKER) LTD., DAGENHAM

7020



Non-Adherent Gauze Net Sterilized

Nonad Tulle is a gauze with a mesh of 2 millimetres and impregnated with 99 parts of soft paraffin, 1 of balsam of Peru.

Dressings made with Nonad Tulle as their foundation are easily removed, without pain or bleeding. Through the wide mesh, secretions are easily absorbed by the outer dressings: accordingly dangerous products do not accumulate in the lesion, and it need not be dressed so often as usual.

Nonad Tulle may be used on septic wounds, burns, gangrene, sloughs, varicose ulcers, indolent wounds, operation wounds, pruritic or infective eruptions, and solar or actinic dermatitis.

In tins of 10 pieces, 4 in. x 4 in., 3/6 each.

NONAD TULLE

Contains BALSAM OF PERU and is STERILIZED

ALLEN & HANBURYS LTD · LONDON · E·2

TELEPHONE BISHOPSGATE 3201 (12 LINES) TELEGRAMS GREENBURYS BETH. LONDON

TRANSFUSION IN PEACE AND WAR*

SIR LIONEL WHITBY, CVO, MC, MD CAMB., FRCP
BRIGADIER; CONSULTANT IN TRANSFUSION AND RESUSCITATION TO THE ARMY

OUT of evil can come good. War has always been a stimulus to progress in medical science. And so it may be profitable to review some war-time advances in a form of therapy which has indeed been a sheet-anchor to our wounded men, and consider how they may affect our peace-time work.

Following Landsteiner's discovery of the blood-groups,[23] the art of transfusion was not extensively practised until towards the end of the last war. Between the two great wars its possibilities were exploited in civil practice by those surgeons who had seen its value on the battlefield[14]; they passed from the arm-to-arm technique to the Kimpton tube, and so to the modern citrated-blood method, which permits ease of handling, as well as storage of the blood against an emergency. It is interesting to recall that blood storage was successfully carried out as long ago as the last war,[24] using a glucose-citrate diluent and with only the crude ice-boxes which were then available. The Spanish war brought the blood bank to the fore, and attempts to prolong the possible storage period were made by the Russians.[2]

In England, at the outbreak of war, the Medical Research Council had already organised a service of stored blood for the London area, while the Army Blood Transfusion Service, initiated by the Royal College of Surgeons soon after Munich, was in full operation within three days of war being declared. After Dunkirk the regional centres of the Emergency Medical Service came into being for the whole of the country.

The war has seen the development of blood substitutes, the perfection of blood-grouping (together with the discovery of new intra-group factors), an appreciation of the limitations as well as the virtues of transfusion, and great developments in technique. The subject has become highly specialised, demanding, for the best results, elaborate precautions and a facile technique which many have learned by reason of war but which is not acquired without considerable experience. In the British Army the policy of creating highly trained transfusion officers has paid handsome dividends. There is little doubt that a similar policy will be as necessary a part of any National Medical Service as the creation of health centres or the provision of facilities for routine radiological or pathological work. With the last the transfusion department might well be linked.

DEVELOPMENT OF THE BLOOD BANK

With the establishment of blood banks much early work was devoted to studying the changes which occur when blood is stored, and the measures which would retard deterioration.[3 9 27] Two main principles are universally acknowledged as indispensable: (1) a scrupulous technique in blood collection, and (2) the provision of immediate refrigeration, which, ideally, should be constantly maintained between 4° and 6° C until the blood is used. Refrigeration has been no easy problem for our armies in the field, especially when operating in tropical climates. But as the result of exhaustive tests apparatus[33] has been made available for the safe transport of blood from Cairo to Tripoli, from the United States to Europe; and a service from England to Burma is easily within the bounds of possibility. Much of this work is applicable to the supply of isolated places in time of peace. As to technical advances, the addition of glucose[3 28] to give a final concentration of 0·5–1·0% is now an essential routine practice, while the virtues of acidification, early recognised[3] but only recently exploited,[24] enable blood to be stored and used with safety as long as 28 days after collection.

These banks of stored blood have been of inestimable value for the emergency work of war, both at home and in the field; they have provided the ideal fluid, which has both oxygen-carrying and volume-restoring power, for the treatment of the exsanguinated. Stored blood finds its best use in this type of work and in the treatment of the simple anæmia of hæmorrhage; it is also extremely useful, when young, for preparing the red-cell concentrates[25] so convenient for the treatment of simple anæmias, especially those of hypoplastic refractory type.[41]

The blood bank is certainly a great convenience: but for peace-time work its limitations should be appreciated[42]: otherwise convenience may well outweigh therapeutic ideal. It is well known, for instance, that some portion of even very young stored blood is quickly destroyed when transfused[3]; the older the blood the more the destruction. And so, with a disease such as aplastic anæmia, where a transfusion life is necessary, there is much to be said for using fresh blood and obtaining the maximum survival. There is indeed quite a body of medical opinion[35 43] which strongly advocates the use of fresh blood for the majority of medical diseases, such as the blood dyscrasias, agranulocytosis, and the hæmorrhagic diseases, and certainly in septic conditions. This is only to be expected when it is realised that in stored blood leucocytes survive no more than a few hours,[36] platelets disintegrate,[20] and prothrombin disappears in a matter of days,[32] while complement[7] and immune bodies likewise deteriorate.

Prolongation of the storage period of blood refers to the red cells only, and not those other multiple ephemeral elements which have such a useful place in medical practice. But though stored blood is most appropriate for treating the exsanguinated, its transfusion carries a danger, particularly when the volume is large and the blood somewhat old. During the war we have learned that a man may lose 2 or 3 litres of blood or more and yet be brought back to life by prompt and adequate transfusion. With a blood loss of this order, oligæmic shock is certain; this combined with the noxious effects of tissue damage readily produces renal impairment. If several pints of somewhat old blood be transfused, the immediate effect may be excellent, but the kidney may be unable to deal with the pigment derived from that part of the transfusion which is inevitably hæmolysed. Oliguria or anuria may follow. The better thing to do is first to restore some circulatory efficiency with a blood substitute, and follow with only enough blood to support the operative and postoperative phases.

Blood banks require the most careful supervision[1 33]; they fully deserve the services of full-time officers. For though stored blood may be life-saving it may equally well be lethal, and he who relies simply on the date on a bottle as a criterion of fitness for use will soon be in trouble. It is essential to have a blood-bank officer to ensure skilled collection, proper refrigeration, and daily inspection and rejection of unfit bottles, and for technical matters such as checking the group, direct matching, and the preparation of red-cell concentrates. In busy times this last may be simply done by keeping bottles inverted in the refrigerator and transfusing no more than the lower half.

DEVELOPMENT OF BLOOD SUBSTITUTES

Much research has been devoted to the perfection of blood substitutes, which might transfer the load from the human donor to the animal world, the vegetable kingdom, or the realm of the synthetic chemist. Success has attended the production of fluids capable of restoring blood-volume, the vital requirement of the exsanguinated; but none possess oxygen-carrying power and so none can be regarded as complete substitutes for blood. Pectin,[16] isinglass,[37] and gelatin[31] have their virtues, but have not come into general use; nor has it been possible to process bovine plasma,[11 21] or serum sufficiently to guarantee freedom from reactions. German ingenuity has naturally turned to a synthetic product; their substance, periston,[17] is not much in advance of the gum-saline of the last war and has now been abandoned by themselves in favour of dried plasma.

The blood substitutes most widely used have been human plasma or human serum in fluid or dried form.[4 29] Great improvements have taken place in the making of the dried form by the development of the spin-freezing process[15 23]; this produces a fine crystal, reduces the drying time, and supplies a substance which is stable indefinitely even under tropical conditions and which reconstitutes rapidly. Dried plasma has been the mainstay of our armies fighting in places where blood is hard to obtain; stocks of it can be built up at leisure to

* Lecture delivered before the Society of Apothecaries of London on Dec. 19, 1944.

provide a non-perishable reserve for any emergency, and it will doubtless find a place in post-war provision for the immediate treatment of road accidents, post-partum hæmorrhage, burns, and other emergencies where immediate restoration of blood-volume is needed to save life. One great advantage of such plasma is that no grouping test is required: another advantage is that plasma does not produce or precipitate any of the intra-group rhesus-factor complications, and so is particularly suitable for emergency maternity work; the obstetrician can carry it in his bag. Early assessment experiments [5] suggested that plasma was superior to serum, but clinical experience has shown that there is little to choose between the two.

A possible future development is a widespread use of purified human albumin solution,[6] which has been freely employed by the American Forces. It is carried in small bulk; it can be prepared equally well from fresh or aged plasma and even from cadaver blood,[13] and a by-product of its manufacture is one of the most potent anti-measles prophylactics in existence.

All these blood substitutes have their limitations. They are excellent for the acute phase of oligæmic shock, but when a large volume is required all surgeons have found that operation and the postoperative phase are less anxious if enough blood be administered to prevent the hæmoglobin being reduced below 70%. When blood is scarce, it should be conserved to supplement the blood substitutes in this way.

Protein nutrition has also been greatly studied,[26] and for this some of the blood substitutes, including plasma,[12] are available. America has paid much more attention to this side of preoperative and postoperative work than we have ourselves. Obviously it is as rational and as important to attend to protein requirements as it is to give the carbohydrate infusions which we have long practised; and none can doubt that recovery is impeded by the hypoproteinæmia so common in the undernourished, who are always bad operation risks. This aspect is also of importance in the exsanguinated—especially abdominal cases who, in the postoperative phase, are starved and hydrated entirely by the intravenous route.

DEVELOPMENT OF BLOOD-GROUPING

The vast experience of war has taught us that blood-group determination is by no means simple; it demands a strict procedure, reagents of high quality, considerable experience, and an appreciation of all the phenomena which may intrude to obscure a simple reading of the result.[30] A single example will make this clear. On many occasions during the war I have been rung up from long distances by an agitated medical officer who has determined the group of his patient as AB, a universal recipient, but who has mercifully tried a direct test on the blood to be transfused and has found the recipient apparently incompatible with everybody, even with the universal donor group O. This paradoxical result, of course, immediately suggests the phenomenon of cold agglutination which demands special precautions for the performance of the test and when giving the transfusion. Knowledge on points such as this has become widely dispersed, but the result has been the delegation of blood-grouping to experts, now that the test is known to be less simple than was at one time believed.

The most spectacular advance, however, has been the separation and study of so-called intra-group factors, distinct from the Landsteiner groups; of these the most important are the rhesus factors.[38 45] The implications have been far-reaching. This discovery has influenced our outlook on multiple transfusions in pregnancy, and transfusions for any woman who has ever been pregnant, and it has led to measures for the prophylaxis and treatment of erythroblastosis neonatorum; also it has provided an explanation of the hereditary nature and the essential pathology of the last-named disease. We have always known that a transfusion carries a risk. But though it was long ago demonstrated that even group O corpuscles are antigenic [18] we have, for a quarter of a century, assumed that a donor once compatible would always afterwards be compatible with the same recipient. "Acquired" incompatibility has been reported from time to time,[47] but on the whole actual disaster from multiple transfusions has been rare. This is because the reaction is not usually fatal and is usually "inapparent" without dramatic symptoms, resulting in no more than a failure to hold the transfused blood—a disappointing transfusion. With modern methods [8] which study the fate of transfused blood many of these disappointments are now understood and can be avoided.

Destruction of the transfused blood not only from rhesus agglutinins but also, more rarely, from agglutinins for the subgroups of A and the factors M, N, and P, has to be considered in all cases of multiple transfusion; while at all times, particularly with massive transfusion, destruction, rapid or slow, by high-titre normal anti-A and anti-B agglutinins is a possibility. Considerable progress has been made towards isolating specific group factors with which dangerous agglutinins can be neutralised. With these group substances one can prepare so-called "conditioned blood" [46]—that is, blood in which all agglutinins have been neutralised—a matter of especial importance in the case of the widely used group O donor. Using such blood only corpuscular compatibility need be considered.

Performance of the necessary tests demands much skill and experience, and their proper interpretation in maternity cases involves a knowledge of the laws of heredity. Such work should be the province of a special transfusion officer at a regional centre where tests and advice can be obtained.

WAR-TIME AND PEACE-TIME TRANSFUSION WORK

Transfusion work in war is essentially of an emergency nature. All possible short cuts to eliminate error and lengthy procedures are necessarily employed. Only a fraction of peace-time practice falls into this category; much of the work is calculated and deliberate, with ample time and facilities for fine determinations. On the battlefield, for example, the only blood used is that obtained from the universal donor; homologous transfusion is not even contemplated, at least in forward areas. Yet homologous transfusion, with all compatibilities satisfied, provides the perfect tissue graft and is the therapeutic ideal in many medical diseases. In war the main requirement is restoration of blood-volume and the treatment of the simple anæmia of hæmorrhage. For this, stored blood is eminently suitable; but I have already indicated that fresh blood is far superior for much of our peace-time work. For such transfusion the direct method,[44] using a heparinised donor, is extremely convenient.

A peace-time panel of donors will need to contain those who, with due notice, are prepared to contribute to the bank or plasma pool, and those who, with relatively little notice, are prepared to be summoned to provide fresh blood.[49] Those who are contributing for plasma alone might well be rendered fit to give blood more frequently by reinfusion of their cells after donation.[39]

In war the commonest recipient is the fit young soldier whose cardiac musculature was in perfect order before his wounding. To him, large volumes need to be and can be administered at fast rate [19] without fear of overloading the circulation or producing pulmonary œdema. Indeed almost the only contra-indications [40] to enthusiastic transfusion in the wounded are injuries to the brain and central nervous system (in which little response is obtained), damage to the lung by blast, irritant gases or steam (which often causes pulmonary œdema), thoracic wounds where the circulation is mechanically impeded, and the onset of the fat embolism which may follow bone damage. In our peace-time patients, on the other hand, we have always to consider the state of the heart muscle,[10] the lungs, the blood-vessels, and essential organs, and from these findings the nature of the transfusion fluid, the amount to be administered, and the rate at which to give it, have to be carefully decided. In war one takes many a chance one cannot afford in peace.

DEMANDS OF PEACE AND WAR

Some idea of the demands of total war can be obtained from table I, which shows the growth of the Army Blood Transfusion Service throughout the war years.

These products have been exported to all our Forces, from Iceland to Madagascar and from England to Burma. This colossal effort could not have been accomplished unaided, and I take this opportunity of publicly acknowledging the generous assistance of the Medical Research

TABLE I—GROWTH OF THE ABTS

	1939–40	1941	1942	1943	1944 *	Grand totals
Donors bled	33,845	77,694	124,241	172,074	216,534	624,388
Blood export (pints)	3952	786	4035	4397	43,394	56,564
Plasma export (fluid) (pints)	8732	15,118	31,609	11,484	38,363	105,306
Plasma export (dried)(pints)	2249	17,090	29,569	95,768	126,228	270,904
Saline export (pints)	6598	23,997	59,790	324,777	288,123	703,285
Administration sets	55,502		47,438	115,830	134,168	352,938

* To Sept. 30.

TABLE II—SOURCES OF SUPPLY FOR ARMY
(Sept 3, 1939, to Sept. 30, 1944). (Figures in pints)

	Blood	Plasma (Fluid)	Plasma (Dried)	Totals
ABTS	41,000	98,587	171,437	311,024
MRC, RN, and EMS	15,564	6719	25,504	47,787
Canada	—	—	73,963	73,963

In addition, the Medical Research Council drying plant, between March and October, 1943, dried 21,149 pints of plasma sent from the ABTS.

Council, the Emergency Medical Service, the Royal Naval Blood Transfusion Service, and the Dominion of Canada (table II).

General experience has shown that 10–15% of wounded men require to be transfused, and that the average casualty for whom transfusion is necessary requires about 4 pints of protein fluid. Table III gives a cross-section of the transfusion work during one of the heaviest stages of the fighting on the Continent:—

TABLE III—UTILISATION OF BLOOD AND OTHER PRODUCTS OVERSEAS
(June 6 to July 20, 1944)

Number of wounded	27,766
Amount of blood sent	13,000 pints
Blood used	11,500 pints
(Average daily: 287) = 41·4 pints per 100 wounded	
Plasma used	5734 pints
(Average daily: 191) = 20·5 pints per 100 wounded	
Saline used	6603 pints
(Average daily: 220) = 23·7 pints per 100 wounded	

The total consumption of our Forces on the Continent during the four months following D-day is shown in table IV.

TABLE IV—REQUIREMENTS FOR EUROPEAN OPERATIONS
(D Day to Sept. 30)

Blood	38,187 pints	Saline	71,240 pints
Fluid plasma	34,388 pints	Administration sets	57,697
Dried plasma	28,709 pints	Penicillin	15,722·63 m.u.

m.u. = mega units

Let us now turn from these massive war figures to the civilian requirements during the past few years. From these I have deliberately excluded those for 1940–41, when much was needed for air-raid casualties. The figures refer to a city of some 400,000 inhabitants with about 4000 hospital beds contained in the city itself and in the small towns within a 30-mile radius. About a third of the material has been used in maternity work:

	1942	*1943*	*1944 (Jan.–Sept.)*
Blood (pints)	3085	3877	3622
Plasma (pints)	2843	2149	2840
Rhesus tests	Nil	35	273

It will be seen that the annual requirements of this city have already reached some 4000 pints of blood and 3000 pints of plasma—the equivalent of some 12,000 donations. With increasing education in the virtues of transfusion these demands for material and special advice are likely to increase.

ORGANISATION REQUIRED FOR PEACE-TIME SERVICE

From what has been said, and from the figures I have been able to give, it will be clear that civil requirements have grown in parallel with war-time experience. The progress in technique, demanding both methods of precision and specialised knowledge, fully justify the continuation of regional transfusion centres with an advisory and executive medical officer whose primary (if not full-time) job is to maintain the high standard of transfusion work which has been of such inestimable benefit during war. He will need the assistance of a second medical officer for bleeding duties, and also two or three laboratory technicians for bacteriological and serological work, for apparatus assembly, autoclaving and other duties, which could with advantage include the preparation of crystalloid solutions for the region—a burden which the Army Transfusion Service has successfully shouldered for all the Fighting Forces. Three or four nurses would need to be provided for bleeding sessions, together with adequate transport, including a mobile refrigerator of sufficient capacity. A store with a competent storeman is also essential.

There can be little doubt that the preparation of dried plasma should be national and not regional, but regions should contribute to the national pool an amount of raw material at least equal to what they use.

The fundamental requirement of such a service is an adequate local donor panel which itself demands an appropriate secretarial department for registration, recording, calling up, as well as for publicity and enrolment. This department may well have the hardest task. During war the public, when properly approached, have given full support to all transfusion services; they have been eager, even anxious, to make this personal contribution to the war effort. Will they be like-minded when it comes to contributing to the needs of their fellow citizens? Will they appreciate the principle that it is as well to put something in the pot while you can, because you never know when you may want to take something out? Or will a donor's fee, optional perhaps, be necessary to maintain an adequate panel?

Before the war the basic donor panels were largely in the competent hands of the British Red Cross or Toc H. During the war these great organisations have also given much assistance. It may well be that they will continue to handle the problem afterwards. But one has to remember that the pre-war panel of the city for which I have given figures amounted to about 100; after the war this city will need to think in terms of 10,000 to 20,000. At the present moment, some 80,000 of its citizens are registered as donors. I have little doubt that if the case is clearly explained to them, a fair proportion will continue their good work for a time at least.

There is also the give-and-take method of maintaining a panel. Whenever a patient receives a transfusion his relatives or friends should contribute an equivalent amount to the bank.

* * *

A national transfusion service will undoubtedly be necessary after the war. Though it is but a small fraction of general medical requirements it should be included in all plans. Each and every region should now prepare an estimate of its needs and lay the foundation of this service before the stimulus of war has evaporated and the fine fabric which exists today has become disintegrated and dispersed.

REFERENCES

1. Army Medical Directorate (1942) *AMD Bull.* No. 14.
2. Bagdassarov, A. (1937) *Sang*, **11**, 466.
3. Bushby, S. R. M., Kekwick, A., Marriott, H. L., Whitby, L. E. H. (1940) *Lancet*, ii, 444.
4. — — — Whitby, L. E. H. (1942) *J. R. Army med. Cps*, **73**, 255.
5. Buttle, G. A. H., Kekwick, A., Schweitzer, A. (1940) *Lancet*, ii, 507.
6. Cohn, E. J. (1941) *Chem. Rev.* **28**, 395.
7. Crosbie, A. Scarborough, H. (1942) *Edinb. med. J.* **49**, 766.
8. Dacie, J. V., Mollison, P. L. (1943) *Lancet*, i, 550.
9. De Gowin, E. L., Harris, J. E., Plass, E. D., Swanson, L. W. (1940) *J. Amer. med. Ass.* **114**, 850.
10. Drummond, R. J. (1943) *Brit. med. J.* ii, 319.
11. Edwards, F. R. (1944) *Ibid*, i, 73.
12. Elman, R. (1942) *J. Amer. med. Ass.* **120**, 1176.
13. Erf, L. A. (1944) *Amer. J. med. Sci.* 207, 314.
14. Gordon-Taylor, G. (1922) Official History of the War. I, p. 108.

Continued at foot of next column

BRACHIAL PAIN FROM HERNIATION OF CERVICAL INTERVERTEBRAL DISC

F. A. ELLIOTT
MB CAPE TOWN, MRCP
MAJOR RAMC

MICHAEL KREMER
MD, BSC LOND., FRCP
MAJOR RAMC

From a Military Hospital for Head Injuries

RUPTURE of the intervertebral discs in the lower lumbar region is now well recognised as a cause—perhaps the main cause—of sciatica (Bradford and Spurling 1941, Symonds 1943). Clinical studies, controlled by operative findings, have resulted in the identification of this syndrome and its distinction from the hypothetical neuritis, fibrositis, myalgia, sacro-iliac strains and so on with which it had hitherto been confused (Love & Walsh 1938, Pennybacker 1940). It was only a matter of time before an attempt was made to determine what rôle, if any, was played by herniations at other levels of the spinal column.

It has long been known that herniation of the nucleus pulposus in the cervical region may produce compression of the spinal cord (Elsberg 1931, Peet and Echolls 1934, Stookey 1940) but it has recently been shown that a laterally placed herniation may compress a cervical root without involving the spinal cord (Semmes and Murphy 1943, Spurling and Scoville 1944). As in the legs, the syndrome so produced stands out in clear relief against the background of the other painful conditions of this region, which are variously attributed to neuritis, radiculitis, fibrositis and myalgia. In this article we report 8 cases of pain in the upper limb which are thought on clinical and radiological grounds to be due to posterolateral herniation of the 6th cervical disc.

ANATOMY

In the cervical region the spinal cord is large and fills the canal moderately completely. Protrusion of an intervertebral disc may, if centrally placed, produce cord compression. Ruptures of the disc which are not to produce cord symptoms must be laterally placed and therefore project into the intervertebral foramen, where quite small protrusions can produce pressure on nerve-roots.

There are eight cervical nerves and only seven cervical discs—the first nerve leaving the canal between occiput and atlas where there is no disc. Herniation of a disc at any cervical level will press on the next numbered nerve—i.e., the 7th cervical root is compressed by the 6th disc, lying between the 6th and 7th cervical vertebræ. In the thoracic and lumbar regions the nerve-roots correspond numerically with the disc opposite to which they emerge. Cervical roots differ from lumbar roots in their transverse course, each running over one disc only, whereas in the lumbar region they run longitudinally and several pass over each lumbar disc. If, therefore, symptoms occur in more than one cervical root distribution then there must either be rupture of more than one disc or an irradiation from one segment to another.

CASE-RECORDS

CASE 1.—Male, aged 38. While lifting a small hammer he felt a sudden sharp pain to the left of the 7th cervical spine, spreading in three days towards the back of the left shoulder, down the back of the arm and dorsum of the forearm to the wrist, and, to a lesser degree, to the upper pectoral region. It was aggravated by coughing, bending the head to the left, stooping and massage. There were paræsthesiæ in the thumb and distal phalanx of the index.

On examination : Lateral flexion of the head to the left and extension of the neck produced pain down the left arm. Head traction gave no relief and pressure on the head did not produce pain. There was no tenderness of the cervical spine, but on the left side the trapezius, triceps and extensors of the wrist and fingers were moderately tender ; there was flabbiness of the triceps and slight weakness of the whole limb, apparently due to fear of pain ; definite blunting to pinprick and light touch over the dorsum of the index finger, proximal phalanx of the thumb and first interosseus space. The right triceps jerk was barely perceptible, the left brisk, and the other tendon reflexes brisk and equal on the two sides. Cerebrospinal fluid (CSF) normal. X rays of cervical spine normal. 'Pantopaque' myelogram showed a filling defect opposite the 6th disc on the left, with non-filling of the sheath of the 7th root (fig. 1*a*). He improved with rest and wearing the arm in a sling.

Comment : The clinical features indicated a lesion of the 7th root. This was confirmed by the X-ray findings.

CASE 2.—Male, aged 38. Three weeks' history of pain in neck, back of right shoulder and down right arm. He was quite fit until the abrupt onset of severe stabbing pain just to the right of the mid-dorsal spine while undergoing forcible neck flexion during PT. Continuous gnawing pain persisted, aggravated by stooping, coughing and lying on the side. Next day he experienced sudden pain down the back of the right arm, lateral aspect of elbow, and posterolateral border of the forearm on to the back of the wrist. Movement of the arm and coughing caused pain down the limb. He noticed a dull gnawing discomfort in the anterior and posterior folds of the right axilla, coming on chiefly when straining. Over the same period he was aware of numbness in the tips of the right thumb and 1st and 2nd fingers : no pins and needles ; pain and numbness aggravated by turning head to left. The right arm felt heavy and weak.

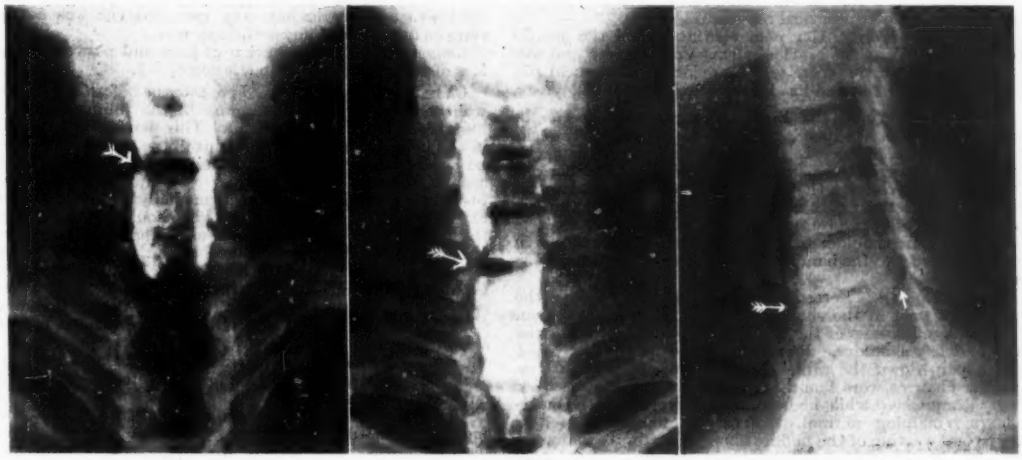
On examination : Slight limitation of all neck movements. Rotation of head to the left produced pain in arm. Lateral inclination of head to right shoulder caused pain in right arm and neck. He was tender to percussion over lower cervical vertebræ and very tender over upper part of right trapezius, extending to the shoulder. Tender over right triceps, radial groove and dorsum of forearm ; definite flabbiness of triceps and some wasting of upper fibres of pectoralis major. Power markedly diminished in right triceps and extensors of wrist ; to a lesser extent in flexors of fingers. Some of this weakness was due to pain. Hypo-algesia and hypo-æsthesia over small area on dorsum of right hand, over 1st interosseus space and proximal portion of index finger. Triceps jerk absent on right, reflexes otherwise normal. CSF normal. Blood Wassermann reaction (WR) negative. X ray of neck normal. Pantopaque myelogram showed filling defect between C 6 and 7 on right side, with non-filling of the sheath of 7th cervical root (fig. 1*b*).

He improved slowly after 7 weeks off work.

CASE 3.—Male, aged 40. Awoke one morning with a slight gnawing pain on the tip of the left shoulder which became steadily worse and 7 days later began to spread over the shoulder and along outer aspect of the upper arm. Two weeks later the pain had spread along radial border of the forearm to the wrist. This pain was almost continuous, but 6 weeks after onset he developed an additional stabbing pain which passed down the left arm to the knuckles of the 2nd

SIR LIONEL WHITBY : REFERENCES (*continued*)

15. Greaves, R. I. N. (1942) *J. Hyg., Camb.* **41**, 489.
16. Hartman, F. W., Schelling, V., Harkins, H. N., Brush, B. (1941) *Ann. Surg.* **114**, 212.
17. Hecht and Weese, (1943) *Münch. med. Wschr.* p. 11.
18. Hooker, S. B., Anderson, L. M. (1921) *J. Immunol.* **6**, 419.
19. Kekwick, A., Maycock, W. d'A., Marriott, H. L., Whitby, L. E. H. (1941) *Lancet*, i, 95.
20. Kolmer, J. A. (1939) *Amer. J. med. Sci.* **197**, 442.
21. Kromen, A. J. (1942) *Surgery*, **11**, 333.
22. Landsteiner, K. (1900) *Wien. klin. Wschr.* **14**, 1132.
23. Lanyon, E. C. G. (1941) *J. Hyg., Camb.* **41**, 111.
24. Loutit, J. F., Mollison, P. L., Young, I. M. (1943) *Quart. J. exp. Physiol.* **32**, 183.
25. MacQuaide, D. H. G., Mollison, P. L. (1940) *Brit. med. J.* ii, 555.
26. Madden, S. C., Carter, J. R., Kattus, A. A., Miller, L. L., Whipple, G. H. (1943) *J. exp. Med.* **77**, 277.
27. Maizels, M., Whittaker, N. (1940) *Lancet*, i, 540.
28. — (1941) *Ibid.* i, 723.
29. — (1944) *Ibid.* ii, 205.
30. Medical Research Council (1943) War Memo No. 9.
31. Parkins, W. N., Koop, C. E., Riegel, C., Vars, H. M., Lockwood, J. S. (1943) *Ann. Surg.* **118**, 193.
32. Quick, A. J. (1940) *J. Amer. med. Ass.* **114**, 1342.
33. Resuscitation (1944). War Office, London.
34. Robertson, O. H. (1919) *Spec. Rep. Ser. med. Res. Coun., Lond.* No. 25.
35. Smith, J. (1942) *Med. J. Aust.* ii, 92.
36. Stewart, C. P. (1940) *Edin. med. J.* **47**, 441.
37. Taylor, N. B., Waters, E. T. (1941) *Canad. med. Ass. J.* **44**, 547.
38. Taylor, G. L., Race, R. R. (1944) *Brit. med. Bull.* **2**, 160.
39. Taj, C., Bartter, F. C., Wright, A. M., Holt, R. B. (1944) *J. Amer. med Ass.* **124**, 331.
40. War Office (1944) Field Surgery Pocket Book, London.
41. Watson, L. (1943) *Lancet*, i, 107.
42. Whitby, L. E. H. (1941) *Proc. R. Soc. Med.* **34**, 257.
43. — (1942) *Lancet*, i, 581.
44. — Britton, C. J. C. (1944) Disorders of the Blood, London, p. 491.
45. Wiener, A. S. (1943) Blood Groups and Blood Transfusion, Baltimore.
46. — Pennell, S. S. (1942) *Amer. J. med. Sci.* **204**, 1.
47. Wolfe, J. J., Gupta, C. E. D. (1941) *Brit. med. J.* ii, 807.



(a) (b) (c)

Fig. 1—(a) Case 1: the column of pantopaque shows a filling defect opposite the 6th disc with non-filling of the root-sheath. (b) Case 2: the pantopaque column is interrupted opposite the 6th disc with non-filling of the root-sheath. (c) Case 4: oblique view showing narrowing of the 6th disc with anterior lipping and side-to-side narrowing of the intervertebral foramen.

and 3rd metacarpals. It was 10 days before he realised that this sharp pain was produced by inclining his head to the left and that it could be eased by putting his head to the right or well down between his knees. Seven weeks after onset he first noticed paræsthesiæ, consisting of a severe tingling on both surfaces of the index, middle and ring fingers. At this time jolting was very painful. An attempt at intermittent head traction was made and he was suspended by the head for 60 seconds. This gave complete relief during the suspension but on being let down again he was very much worse and after the ninth suspension his pain became so bad that he was confined to bed. He found that in bed he could sleep only on his back at an angle of 30° and the pillows had to be arranged to prevent him from slipping. He was seen by us 3 months after onset; the pain was improving but was still severe.

On examination: Carried head a little over to the right. There was slight tenderness over the spines of C 6 and 7 and also just to the left of this area. There was limitation of left lateral flexion because this produced pain. There was definite wasting and flabbiness of the left triceps and extensors of wrist. There was weakness of the left triceps and slight weakness of the extensors of the left wrist and fingers. No sensory loss. Left triceps jerk was absent, other reflexes being brisk. CSF was normal in all respects. X ray showed a well-marked loss of the intervertebral space between the 6th and 7th cervical vertebræ. There was marginal lipping which extended laterally and posteriorly to encroach on the vertebral foramen. Pantopaque myelography showed non-filling of the left 7th cervical nerve-root sheath with good filling at other levels.

This patient was treated by rest until the pain cleared up and 5 months after onset he was pain free. The left triceps jerk was still absent at this time.

Comment: Clinically a lesion of the left 7th cervical root, confirmed by myelography. Spontaneous remission.

CASE 4.—Male, aged 34. While playing rugby in late 1942 he was handed off by a blow on the left side of the neck. Two days later he developed a pain above the left scapular spine which in a few days radiated across the posterior axillary fold and down the outer aspect of the left upper arm and along the radial border of the forearm to the index and thumb knuckles. This was a dull continuous ache on which were superimposed momentary stabs, throughout the painful area. A fortnight after the onset he developed a sensation like a severe electric current deep in the upper arm and along the lateral aspect of the forearm to the thumb and index. This was intermittent and could be produced by bending the head forward and to the left. A diagnosis of brachial neuritis was made and he was treated with physiotherapy. The condition varied in intensity and was made worse by jolting, as when running or being in a bumpy car. In August, 1943, his neck was manipulated without anæsthesia and all his symptoms increased. There was now involvement of the right arm with radiation of pain and paræsthesiæ into the thumb, index and middle fingers of the right hand. This attack lasted 2 months. Pain was increased by a lumbar puncture. The spinal fluid was normal in all respects. From October, 1943, he had several sharp attacks of pain and paræsthesiæ lasting for a week each, particularly after physical effort. He was admitted to this hospital in April, 1944, because of a severe attack of pain and tenderness in the upper part of the left trapezius. He also had pain in both arms running into the thumbs and outer fingers.

On examination: Very slight limitation of left lateral flexion of cervical spine, with no tenderness. The left triceps was flabby and a little weak and there was slight weakness of the extensors of the left wrist. The left triceps jerk was lost. There was no constant sensory abnormality on repeated examination. The rest of the central nervous system was normal. Paræsthesiæ could be produced in the left index and middle fingers by forcible lateral flexion of the head to the left. There was no evidence of costoclavicular compression. X ray showed loss of normal lordosis with almost complete disappearance of the intervertebral disc between the 6th and 7th cervical vertebræ. Gross marginal lipping was present with a little forward angulation. In oblique views the marginal lipping was seen to encroach upon the intervertebral foramina on either side (fig. 1c).

This patient was given a leather collar and there have been no further acute episodes though the chronic pain and paræsthesiæ are still present.

Comment: A lesion of the 7th cervical root on each side with radiological evidence of side-to-side narrowing of the intervertebral foramen.

CASE 5.—Female, aged 36. Abrupt onset of pain in lower part of neck and between the scapulæ while making a bed, passing next day from root of neck down outer aspect of right arm and forearm to the radial border of the wrist. She located the pain especially in the outer surface of the elbow, just below the head of radius, and it was associated with paræsthesiæ in the index and middle fingers. Pain aggravated by coughing, stooping and turning head to right. This persisted for 5 weeks and appeared to be aggravated by cold, movements of the arm and jolting the spine.

On examination: Neck movements were very free except for lateral inclination of head to right shoulder, which produced pain down arm and in neck. She was tender over the lower cervical vertebræ and very tender over the upper free edge of the trapezius and subjacent muscles, as judged by needling. There was tenderness over the triceps and extensors of forearm and slight hypalgesia over the distal phalanges of the index finger. No weakness or wasting. The triceps jerk was absent on the right but all other reflexes were normal. CSF normal and WR negative. X ray of cervical spine showed narrowing of 6th cervical disc.

Comment: The clinical and radiological evidence pointed to a lesion of the 7th cervical root on the right.

Subsequent history: Her pain continued and she sought advice elsewhere. The brachial plexus was explored and was found to be normal; there was no evidence of cervical rib. She slowly recovered and has been free of pain for two years.

CASE 6.—Male, aged 42. Eighteen years ago he had a stiff neck of abrupt onset which lasted for a fortnight. Ten weeks before admission he developed a painful stiffness of the neck; this became severe, and pain spread laterally to the back of the left shoulder, down the outer aspect of the left arm and forearm to the wrist. It was aggravated by using the left hand, by coughing and by turning the head to the left. If he allowed the left shoulder to sag he developed paræsthesiæ in the ulnar border of the hand and little finger, but the pain was unaffected.

On examination: Forced movements of the head to the left caused pain in the shoulder and upper pectoral region. There was tenderness of the muscles between the root of the neck and left shoulder. Pressure in the supraspinous fossa caused pain down the arm. No weakness, sensory loss or vascular changes were found in the hand. The triceps jerk slowly disappeared while he was under observation, the other reflexes remaining normal. There was flabbiness of the triceps and wasting of the middle fibres of pectoralis major on the left. X ray showed narrowing of the 6th cervical disc and a unilateral rudimentary cervical rib in the left. This was thought to explain the paræsthesiæ in the distribution of T1, when the shoulder sagged. Electromyogram showed no evidence of denervation in the muscles of the limb, but there was increased irritability in the tender muscles, and sustained discharge of action potentials at the trigger areas in the muscles of the shoulder girdle. Injection of procaine into these areas stopped this spasm and gave him partial relief from pain.

Comment: The distribution of pain in the limb, and the disappearance of the triceps jerk, indicated a lesion of C7. The narrowing of the 6th disc was compatible with a herniation at this level.

CASE 7.—Male, aged 36. (This patient is a doctor and the description is given in his own words.) Woke with pain in the right side of the neck, spreading to the shoulder tip. During the day the pain spread down the back of the shoulder into the dorsum of the right forearm. During the next few days this pain increased in severity and a dull ache began in the extensors of the fingers. There was a little weakness of finger movements at this time but no reflex change. After a week the pain subsided and tingling started on the palmar surface of the right hand. It began in the thumb and spread to the first two fingers. Later it involved the radial half of the palm and spread up the outer side of the forearm about halfway to the elbow. It was variable and increased over a week. During this time the triceps jerk became sluggish and there was definite weakness of triceps. The symptoms were worse at night and sleep was considerably interrupted by dull aching pain in the muscles as above and by paræsthesiæ. There was no demonstrable sensory loss, but subjectively there was obvious over-action to pain and light touch in the area of paræsthesiæ. It was found that movement of the neck would intensify the sensory symptoms, but it was very difficult to analyse which movement was responsible alone. After 3 weeks the triceps jerk disappeared. There was no increase in weakness.

Full neurological examination on two occasions showed no other defect. At this time, sustained pressure on the head increased the pain in the neck, shoulder and arm, and caused an exacerbation of the paræsthesiæ. Each time there was a definite delay of at least 5 seconds before the onset of the results of the test. Because of this, manœuvres of the neck were performed with a period of waiting afterwards and it became apparent that the only position which induced symptoms was that of flexion of the neck to the right with moderate extension, particularly with the chin well forward (as in looking at an aeroplane in the left visual field). This, after about 5 seconds, induced so much pain and such uncomfortable paræsthesiæ that it could not be maintained for more than about 10 seconds. In consequence an extra pillow was used, the idea being to keep the neck flexed to the left. This resulted in gradual improvement and there was no disturbance caused by paræsthesiæ during the night.

Improvement began about eight weeks after the onset, but whether it was spontaneous or resulted from the extra pillow is not known. Improvement was steady and appears now to be complete. X ray of neck was normal. At no time was activity in any way curtailed nor was a splint, sling or any form of physiotherapy used.

Comment: The distribution of pain and paræsthesiæ and loss of triceps jerk point to a lesion of C7.

CASE 8.—Male, aged 46. Five months before admission he woke one morning with tingling in the thumb, index and middle fingers of the left hand. This persisted, particularly in the index finger, throughout his illness. A fortnight later he began to have pain behind the left shoulder in the supra-scapular region. Physiotherapy and injections of procaine brought no relief. Pain spread medially to the root of the neck, laterally to the tip of the left shoulder, down back of the arm and dorsum of forearm as far as the knuckles. It also spread to the upper pectoral region. The left shoulder was raised and the head fixed with inclination towards the shoulder. Manipulation of the neck under 'Pentothal' relieved him of the stiffness and pain in the neck, but the pain in the arm was unaffected. His incapacity persisted and interfered with sleep.

On examination he was found to have slight limitation of neck movements, especially flexion and rotation to the right, but forward flexion was full. There was considerable tenderness in the levator scapulæ, upper fibres of trapezius and supraspinatus, with weakness. Blunting to pinpricks on the dorsum of index finger. Reflexes brisk. CSF normal and WR negative. X ray showed narrowing of 5th and 6th cervical discs. Electromyogram showed no evidence of denervation but spontaneous motor activity in the tender muscles of the shoulder girdle, arm and forearm.

Comment: The distribution of pain and paræsthesiæ suggests a lesion of the 7th root. X rays confirm the presence of an abnormality of the appropriate intervertebral disc.

ANALYSIS OF CLINICAL FINDINGS

Symptoms and signs fall into two groups—those which are irritative or excitatory, such as pain, paræsthesiæ and muscle spasm, and those which are paralytic or inhibitory, such as weakness, wasting, sensory loss and reflex changes.

The common complaint is of pain, usually with paræsthesiæ. Rarely does the patient come for numbness or weakness. The pain is of a dull gnawing character, often compared to toothache. It usually begins behind the shoulder girdle in the supraspinatus area and spreads at varying rates (usually taking days) over the outer aspect of the shoulder and posterior axillary fold, along the outer aspect of the upper arm to the elbow, and then along the radial border of the forearm to the wrist. It is common for the pain to stop at the wrist, but it may go into the index and middle knuckles. Patients may complain of "pain" in the finger tips but on careful inquiry it is usually found that by pain the patient means unpleasant paræsthesiæ in the more distal parts. The pain may take some days to a week or two to spread from the shoulders to the wrist. Superimposed on the background of a dull ache there is almost invariably a much sharper pain which radiates rapidly through the whole distribution and is commonly described as a stab or electric shock. This shock extends into the index finger and may spread to the thumb and middle fingers.

Aggravating factors.—Neck movements are variable in effect. In most cases flexion of the head to the side of the lesion produces or aggravates the pain. This may not happen at once but requires an interval of seconds or even minutes and presumably acts by squeezing the herniation against the nerve. Very rarely flexion away from the lesion produces pain. This is usually immediate and we believe occurs when the root is adherent to the disc and is vigorously stretched across it. Jolting of the body, as in a car, often aggravates the pain and may produce paræsthesiæ, whereas jarring of the spine rarely has any effect. Straining, sneezing and coughing will in the acute stages produce a shoot of pain in the usual distribution. Using the arm in certain postures will produce pain and paræsthesiæ—e.g., holding the arms outstretched as when playing the piano or pushing a lawn mower. Each patient will by experience find some posture of the arm which is a specific aggravating factor.

Lumbar puncture may produce a sharp attack of pain. Manipulation is potentially a dangerous procedure which might conceivably precipitate cord compression and may start off a full-blown attack with increase of

pain and paræsthesiæ. If a general anæsthetic is used for the manipulation of a case with much muscle spasm, then the relaxation of the spasm by the anæsthetic will relieve pain and this relief may be wrongly attributed to the manipulation.

The position in bed at night is very important, for unless the pillows are carefully arranged it is extremely easy for the head to slip into a posture that would be avoided in waking hours. This is sometimes the cause of the pain and paræsthesiæ which awaken patients and may make continuous sleep impossible.

Relieving factors.—The posture of the cervical spine is the most important factor. Every patient finds after a week or two which position gives him the greatest relief, and once this is determined he will try to keep his head in that position until the condition clears up. The common relieving movement is lateral flexion of the head away from the lesion. An element of flexion or extension may have to be introduced but this is variable. Putting the head down between the knees will sometimes ease the pain. Mechanical traction by head harness will ease the pain while traction is maintained. As already mentioned, posture in bed is important; lying flat or almost flat is not good, and in at least two of our cases the turning point towards recovery seemed to come when an extra pillow was used and the patient was sitting up more than usual. An angle of 30–40° seems best. Fixation of the neck as by a leather collar produces relief so long as the collar is worn.

Paræsthesiæ.—Like pain, paræsthesiæ are in these cases a result of irritation of a nerve-root. They are variable in nature, being described as tingling, pins and needles, a sense of vibration, electric currents, or a dead feeling. They may be mistaken for pain and indeed are sometimes so unpleasant that they may form the patient's major complaint. Their general distribution is much the same as that of the pain but differs in that they are maximal at the periphery. Invariably the index finger is affected, with frequent spread into the thumb and middle fingers. Paræsthesiæ, if not spontaneous, may be produced by any of the manœuvres which aggravate the pain and also by pressure on tender points in muscles. Like the pain it is unusual for the paræsthesiæ to begin until two or three minutes after the aggravating stimulus is applied. Our cases have not shown any gross vascular changes, nor has there been any suggestion of compression of the limb vessels in the costoclavicular space. It is unlikely that the paræsthesiæ are vascular in origin. In one case there has been spread of paræsthesiæ into the inner fingers. Spurling and Scoville (1944) suggest that this is not uncommon and is due to a secondary spasm of the scalene muscles producing a scalenus anterior syndrome. This was seen in case 6, in whom there was a rudimentary cervical rib on the affected side. We feel, however, that generally speaking the spread of paræsthesiæ, and the wide distribution of pain and tenderness in muscles on either side of the seventh cervical area, are due to wide overlap of cervical segments and the spread of an excitatory process in the spinal cord.

Tenderness is usually deeply situated in the upper fibres of trapezius, levator scapulæ, upper fibres of pectoralis major, triceps, and along the extensor muscles on the dorsum of the forearm. It varies in degree from slight to severe, with points of special intensity in the trapezius and subjacent muscles. Pressure on such "trigger" areas may cause pain to shoot down the arm with or without exacerbation of the paræsthesiæ. Infiltration of these trigger points with procaine will sometimes relieve the patient's symptoms, a fact which has led to an incorrect diagnosis of fibrositis in some cases. Hyperalgesia of the skin was present in only one case.

Wasting, weakness, sensory loss and reflex changes are paralytic or inhibitory phenomena and when present have a narrow, sharply defined and more constant distribution than the excitatory phenomena. This narrow distribution is due to the segmental overlap which is so marked in the cervical roots and we feel that this is strong evidence in favour of the uniradicular nature of the syndrome. Weakness of the triceps and extensors of the wrist may occur, but it is not always possible to know how much of this is due to interference with the nerve supply and how much to the pain. Flabbiness of the triceps is common, and there may be wasting of the triceps, extensor region of the forearm, and sternal fibres of the pectoralis major. In lesions of the 6th cervical disc, involving the 7th root, the triceps jerk is often reduced or absent, but it varies from time to time in individual cases and is conserved in the early stages of the condition. The biceps and supinator jerks are unaffected.

Sensory loss is never complete and usually consists of a minor degree of hypo-algesia and hypo-æsthesia. This involves both surfaces of the index finger and may include the middle finger and terminal phalanx of the thumb. It usually misses the dorsal surface of the first interosseus space, but may spread to the radial border of the wrist and distal third of the forearm (see fig. 2). We have found no loss of deep sensibility.

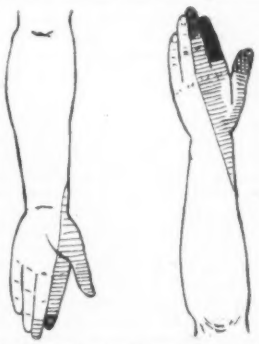


Fig. 2—Distribution of hypo-æsthesia and hypo-algesia in lesions of 7th cervical root attributed to prolapsed disc. The frequency with which these changes are found is indicated by the density of the shading.

GENERAL NEUROLOGICAL AND SPECIAL EXAMINATIONS

The laterally placed herniations do not compress the spinal cord and there is a corresponding absence of abnormal neurological signs in the trunk and lower limbs. The cerebrospinal fluid has been normal in the cases reported here and the Queckenstedt test showed no evidence of block.

Electromyograph studies.—On testing the affected muscles with the electromyogram, there was no evidence of denervation—i.e., no fibrillation action potentials (Weddell et al. 1943)—but the tender muscles showed a consistent increase of irritability, while in two cases with "trigger" areas in the muscles of the shoulder girdle there was continuous and apparently involuntary spasm of small groups of muscle-fibres at the sites of maximum tenderness. This spasm was removed by procaine injected at the seat of the discharge. The relief of pain which followed this procedure is thought to mean that the spasm induced by the painful lesion of the nerve-root formed a secondary source of pain.

Cervical spine.—Clinical examination of the spine shows remarkably little abnormality. Only in the acute phases is there much limitation of movement. This is usually protective to prevent lateral flexion or rotation to the side of the lesion. Pressure on the head from above usually produces pain or paræsthesiæ in the distribution described.

Clinical tests.—These consist of attempting to squeeze the nerve against the pedicle or lamina by narrowing the already narrowed intervertebral foramen. Spurling's "neck-compression test" is the best manœuvre and is carried out by exerting a steady downward pressure on the forehead from behind while the head is tilted towards the lesion. Pain and paræsthesiæ are produced but it is important to remember the delay in onset of symptoms and also that the test is positive only in the active phase of the condition.

X rays may be normal. There may be a reduction of the normal cervical lordosis, narrowing of the 6th cervical disc, narrowing with sclerosis of the margins of the adjacent vertebræ, narrowing with anterior lipping, and narrowing with lipping in the region of the intervertebral foramen. This last is probably important inasmuch as the foramen is narrower from side to side than from above down, and any further reduction of its width by a protrusion of the disc will compress the emerging root (case 4). Lipping in this situation is best seen in oblique views. Changes such as these are however at most suggestive. They are common in people without symptoms. More accurate information is derived from contrast myelography. Pantopaque is used for this purpose because its fluidity, unlike 'Lipiodol,' enables it constantly to fill small spaces like the dural sleeve and it can be removed by a lumbar puncture needle relatively easily when the examination is complete. In the three

cases in which this was done a filling defect was demonstrated opposite the 6th cervical disc on the affected side and—more important—the dural sleeve surrounding the root did not fill, in contrast to the good filling of the unaffected roots above and below. This obliteration of the root sac confirms the presence of a pathological process, and in conjunction with a filling defect or notch in the column of pantopaque suggests that the non-filling is due to a herniation of the disc at that level. These radiological findings were identical with those of Spurling and Scoville (1944), in cases of operatively verified herniations.

TREATMENT

Treatment is essentially conservative. In none of our cases was surgery considered necessary. The important factor is rest to the neck. This is done automatically by the patient when he fixes the head in the easiest position. If pain is very acute then rest in bed with careful adjustment of the pillows is necessary and effective doses of the simpler analgesics should be used. In every case, whether confined to bed or not, a review of the sleep position must be made and the most suitable height of pillows found by trial. According to Spurling and Scoville continuous head traction by a harness using 10–12 lb. weight will relieve pain in any case and the majority will remain symptom-free after 3–5 weeks. None of our cases has been severe enough to require this. As a lesser or continuation measure a well-fitting leather collar worn during the day will suffice. If these measures fail after adequate trial then surgery may be tried (Spurling and Scoville 1944, Semmes and Murphy 1943).

DISCUSSION

Trauma is not an essential precursor of the syndrome and even when present it may be no more severe than the minor traumata which may happen to anyone. Sometimes however there is a specific blow or twist which may precede the symptoms so closely that it is impossible to ignore it. Occasionally there is a history of cricks in the neck for months or even years before pain begins but these cricks differ in no way from those occurring in patients in whom no subsequent symptoms develop. It therefore seems necessary to invoke a degenerative as well as a traumatic factor.

It is thought that degenerative changes in the nucleus pulposis precede herniation in those cases which start with either slight trauma or no trauma at all. The nuclear material found at operation is usually softer and less elastic than normal, and may spontaneously exude when the annulus is incised. Haglund (1942), describing autopsy studies on posterior, posterolateral and lateral herniations in the cervical region, shows how the nuclear material pushes aside the surrounding laminæ of the annulus in tracking towards the periphery, and demonstrates compression of cervical roots, together with a case of kinking of the vertebral artery by a lateral protrusion. He quotes Jonsson's (1939) findings in support of the degenerative nature of the process underlying prolapse. It is our present view that if the annulus holds firm the nuclear material may herniate into the body of the vertebra above or below, producing a Schmorl's node. But if the annulus is weakened by degeneration or by the presence of a congenital defect, a comparatively minor trauma will force the swollen nucleus through it. This is admittedly an entirely theoretical conception, which arises from the frequent association of Schmorl's nodes and posterolateral herniations in the same subject, and from the trivial nature of the trauma in many cases. In the lumbar region the mechanism is thought to be exactly the same. The greater frequency of ruptured lumbar discs is probably due to their having to take the body-weight and their chances of trauma being greater.

The clinical picture presented by these cases stands out in clear-cut contrast to the other forms of pain in the upper limb with which they have hitherto been confused. Root symptoms occurring in the presence of radiological evidence of cervical spondylitis osteoarthritica have long been recognised (Hanflig 1936, Turner and Oppenheimer 1936) but without the realisation that the symptoms were due to the involvement of a single root by a herniation of the disc. In the absence of radiological changes they have been attributed to a primary "radiculitis" or "brachial neuritis." When associated with well-marked tenderness of the muscles of the shoulder girdle they are commonly regarded as fibrositic, and any paræsthesiæ or objective neurological changes were attributed to a spread of the fibrositis to involve the nerves of the brachial plexus. The presence of trigger areas, which when pressed on give rise to pain in the arm, is often accepted as confirming the presence of fibrositis, and, if infiltration of the tender areas with procaine relieves the pain, proof is regarded as complete (Steindler and Luck 1938). It has been pointed out elsewhere (Elliott 1944) that such trigger areas occur in the presence of root lesions, and that relief from procaine does not exclude such a lesion. Fibrositis is a hypothetical entity, without known pathology, but if it does occur it is difficult to imagine how any such process could spread from the muscles of the shoulder girdle through the cervical fascia to involve a single root. The implication of a prolapsed disc, on the other hand, not only explains the combination of unequivocal motor, reflex and sensory signs on a uniradicular basis, but also brings this form of brachial pain into line with the better established condition of radicular sciatica.

Diagnosis in these cases was based on the clinical picture and confirmed by the use of pantopaque myelography in three cases. Surgical verification was not obtained because the natural course of the condition is towards spontaneous recovery.[1] It is felt that surgery should be reserved for recurrent severe cases—a view shared by Spurling and Scoville. They describe herniations of the 5th cervical disc pressing on the 6th root, and although none have been encountered in this series it is thought that Semmes and Murphy's expectation of lesions at this and other levels is likely to be realised now that attention has been drawn to the possibility.

SUMMARY

Eight cases of brachial pain are described.

They showed a uniform distribution of pain in the back of the shoulder, down the back of the arm and the radial border of the forearm, and sometimes in the upper pectoral region. There were paræsthesiæ in the thumb, index and middle fingers. In some cases there was a history of acute stiff neck.

The signs included limitation of movement of the neck; pain produced in the arm by movements of the neck and by downward pressure on the head; and tenderness, weakness, and wasting of the upper fibres of pectoralis major, triceps and extensors of the wrist and fingers. The triceps jerk was reduced or absent, and there was usually hypo-algesia on the thumb and index finger.

The clinical picture was that of a lesion of the 7th cervical root.

Contrast myelography in three cases showed a filling defect opposite the 6th intervertebral disc, involving the 7th cervical root on the affected side.

The clinical and radiological evidence suggested that the brachial pain was caused by a herniation of the 6th cervical intervertebral disc.[1]

We are indebted to Major Hugh Davies, RAMC, for the radiological investigations; and to Lieut.-Colonel C. G. Greenway, RAMC, for permission to use hospital case-records.

REFERENCES

Bradford, F. K., Spurling, F. G. (1941) The Intervertebral Disc, Springfield, Mass.
Elliott, F. A. (1944) *Lancet*, i, 47.
Elsberg, C. A. (1931) *Bull. neurol. Inst.* **1**, 350.
Haglund, F. (1942) *Acta radiol.* **23**, 568.
Hanflig, S. S. (1936) *J. Amer. med. Ass.* **106**, 523.
Jonsson, E. (1939) Handbuch der pathologishe Anatomie, Berlin.
Love, J. G., Walsh M. N. (1938) *J. Amer. med. Ass.* **111**, 396.
Peet, M. M., Echolls, D. H. (1934) *Arch. Neurol. Psychiat.* **32**, 925.
Pennybacker, J. (1940) *Lancet*, i, 771.
Semmes, E., Murphy, F. (1943) *J. Amer. med. Ass.* **121**, 1209.
Spurling, R. G., Scoville, W. B. (1944) *Surg. Gynec. Obstet.* **78**, 350.
Stookey, B. (1940) *Arch. Surg.* **40**, 417.
Steindler, A., Luck, J. (1938) *J. Amer. med. Ass.* **110**, 107.
Symonds, C. P. (1943) *Med. Ann.* p. 310.
Turner, E. L., Oppenheimer, A. (1936) *Ann. intern. Med.* **10**, 427.
Weddell, G., Feinstein, B., Pattle, A. (1943) *Lancet*, i, 236.

1. This has subsequently been confirmed by operation on three similar cases not included in the above series.

CAVERNOUS SINUS THROMBOSIS TREATED WITH PENICILLIN

D. F. JOHNSTONE, MRCS, DPH
MEDICAL SUPERINTENDENT, CITY ISOLATION HOSPITAL, PLYMOUTH

A MARRIED woman, aged 19, a machinist by occupation, was admitted to hospital on June 30, 1944, notified as erysipelas. She had been treated at home for 4 days, receiving about 15 g. of sulphanilamide by mouth. A small boil had appeared on the tip of her nose a week before the onset of her illness.

THE FIRST WEEK

On admission she looked very ill, T. 102° F., P. 90, R. 22 per min. The upper part of her nose and forehead was œdematous and dusky red, and there was intense bilateral swelling of the eyelids, so that it was almost impossible to inspect the eyes without causing pain. There was a small discharging boil just to the left of the tip of the nose. White-cell count 18,000 per c.mm. (polymorphs 72%, lymphocytes 20%, monocytes 8%). She was given sulphathiazole 1 g. every 4 hours and sedatives, with copious fluids by mouth. Next day there was little change; she was restless and delirious. On July 2, although her temperature was still high, she was more rational; her eyes showed slight but definite proptosis, justifying a tentative diagnosis of cavernous sinus thrombosis. On the 3rd her temperature began to fall and remained at about 100° F., but her general condition had deteriorated and she was comatose and resentful of all interference. There was severe proptosis of both eyes, and immense œdema of the eyelids with chemosis. The optic discs showed intense papilloedema. Six days after admission (July 5) she showed no improvement in spite of just over 30 g. of sulphathiazole by mouth and this was therefore discontinued. It was thought that penicillin held out the only chance of recovery and fortunately a supply became available. As soon as it arrived, 100,000 units was given intravenously at 4.15 PM on the 5th and a similar dose was given intramuscularly at 10 PM. Cultures from the boil on her nose, which had not completely healed, showed coagulase-positive *Staph. aureus*, which was penicillin-sensitive. Next day she was given 100,000 units of penicillin at 10 AM and 7 PM. There was much less swelling in the left eyelids and a good deal less œdema of the face. The temperature dropped to normal and her general condition was much improved. Red cells 3,860,000 per c.mm., Hb 67%, colour-index 0·87; white cells 28,000 per c.mm. (polymorphs 82%, lymphocytes 16%, monocytes 2%). There was still well-marked papilloedema, with immobile pupils, and ocular movements were impossible. By the 7th the patient was feeling much better, and the swelling of the eyelids on both sides was much more localised. Another 100,000 units of penicillin was administered at 10 AM, a total of 500,000 units in 3 days. At 7 PM the patient said she felt very well.

On July 8 she improved still further. The œdema of the lids had now subsided enough for her to open both eyes slightly, although both eyeballs were still immobile. A further 200,000 units of penicillin was given during the day.

DEVELOPMENT OF ENCEPHALITIS

On July 9, at 5 PM, the patient seemed somewhat drowsy and complained of headache and nausea, for which no adequate cause was found. Next morning her headache was better, but she was still drowsy and apathetic. There were no signs of meningitis. White cells 20,000 per c.mm. (polymorphs 80%, lymphocytes 16%, monocytes 4%). Mr. C. Tivy kindly examined her eyes and reported:

Right eye.—Some proptosis. Movements very limited. Pupil semi-dilated but active. Media clear. Upper edge of optic disc swollen and œdematous. Lower edge clear-cut.

Left eye.—Slight proptosis. Movements a little better than the right, but very limited. Pupils active. Upper half of optic disc swollen and blurred. Central cap filled up. Veins moderately dilated. Both eyes recovering from papilloedema.

On July 11 she was still drowsy and uninterested in her surroundings. The left eye was now almost normal and all its movements had returned. In the right eye there was still much conjunctival chemosis, but the muscles had begun to function satisfactorily with the exception of the internal rectus. Two days later (13th) both eyes were almost normal, but there was some ptosis of the right upper lid. She complained of headache and vomited once or twice. Nothing could be found to account for this. She continued in much the same state for the next 4 days, when (17th) both lids of the right eye swelled up again and her conjunctiva became so œdematous that it hung down like a curtain. White cells 15,000 per c.mm. (polymorphs 68%, lymphocytes 27%, monocytes 5%). Mr. Tivy thought the reason might be some residual infection in the ethmoidal sinus, but X rays reveal no abnormality. Some improvement followed instillation of adrenaline into the eye, but her general condition steadily deteriorated.

On July 19 penicillin was resumed and she was given 100,000 units twice daily for 3 days. There was an [illegible] response. Almost all her signs and symptoms disappeared except for slight proptosis of the right eye and occasional diplopia. White-cell count on the 22nd, 10,000 per c.mm. (polymorphs 71%, lymphocytes 27%, monocytes 2%). Two days later she was able to get out of bed for short periods, and her progress seemed very satisfactory. Apart from slight ptosis of the right upper lid there were no physical signs and her general condition remained excellent until the 28th, when she complained of headache and lassitude. Red cells 4,610,000 per c.mm., Hb 78%, CI 0·84; white cells 10,500 per c.mm. (polymorphs 68%, lymphocytes 30%, monocytes 2%). The headache became gradually more pronounced; it was centred over the left frontal region, was worse first thing in the morning, and was accompanied by nausea, occasional vomiting, and complaint of a bad smell which she thought was due to the drains—an idea vigorously repudiated by her attendants! Her pulse-rate, which had been steady at 76–80, now rarely rose above 66 per min. Lumbar puncture showed a clear fluid under normal pressure; protein 85 mg. per 100 c.cm., globulin ++, an occasional lymphocyte present, no organisms. Blood WR negative. The headache became still more severe and constipation was now troublesome. There was pain and tenderness over the left frontal region, and her clinical conditions and the findings in the CSF strongly suggested an abscess in the left frontal lobe.

PROGRESS AT BURDEN INSTITUTE

At this stage she was admitted to the Burden Neurological Institute for further investigation and I am indebted to Surgeon Captain Lambert Rogers, RNVR, for the following notes.

On admission to the institute she was symptom-free. Slight bilateral proptosis and a patchy erythema of the upper part of the face. Fundi showed bilateral optic neuritis but no papilloedema. Eye movements normal. X ray of skull showed no abnormalities.

Electroencephalogram before operation (Aug. 8).—There was a very large, very slow delta discharge in the left frontal lobe which tended to spread towards the left temporal region. The frequency of this discharge varied, at times being as slow as 0·5 c./s. at other times showing a frequency of up to 2 c./s. This finding suggests a lesion in the left frontal lobe. To discover the nature of this it will be necessary to repeat the EEG in about 7 days' time, but the general picture is like that of an abscess.

Operation on Aug. 10, by Surgeon Captain Lambert Rogers.—Burr hole in left frontal region. Left frontal lobe needled. No abscess found. Lobe soft and non-resistant to needle. Ventricle tapped CSF not under pressure. Wound closed. Lumbar puncture performed, pressure 200 mm., clear colourless fluid. CSF then allowed to escape and replaced by 10 c.cm. (10,000 units) of penicillin in head-down position. Patient rather drowsy and obfuscated after operation. Absent abdominal reflexes on right; right knee-jerk more brisk than left; plantars, right no response, left flexor.

Electroencephalogram after operation (Aug. 22).—There was a sharp focus of very slow delta waves in the left temporal region. The left frontal lobe now showed very little abnormality. The amplitude of the delta discharge was higher than was previously reported, but remained unusually slow in frequency at 0·5–1·5 c./s., suggesting a progressive rather than a recovering lesion in the left temporal region, probably involving the deeper structures as well.

By Aug. 25 she was much improved. No headache. No proptosis. No signs of a gross neurological lesion.

Dr. F. L. Golla, director of the institute, sent her back to the City Isolation Hospital on Sept. 5 with the following report:

"The slight bilateral proptosis together with the neuritic symptoms led the surgeons to consider that they probably had to deal with a frontal abscess. Nothing was found at operation. Penicillin was used as a precautionary measure and the patient has made an absolutely good recovery. One can only assume that there was at one time a marked inflammatory reaction simulating abscess and that this has now completely subsided."

On re-examination at this hospital the patient seemed very well and no abnormality whatever was found. The optic discs appeared normal. Red cells 4,150,000 per c.mm., Hb 74%, CI 0·89; white cells 7900 per c.mm. (polymorphs 63%, lymphocytes 31%, monocytes 6%). She was discharged on Sept. 7.

DISCUSSION

Septic thrombosis of the cavernous sinus has a high mortality-rate—almost 100%—and there is little doubt that but for the penicillin this patient would have died. Altogether she received 1,310,000 units. A similar case of unilateral cavernous sinus thrombosis treated at this hospital a few weeks ago succumbed, in spite of showing improvement at first with heavy dosage of sulphathiazole and sulphadiazine.

The case illustrates the following points. In cavernous sinus thrombosis following staphylococcal infection of the skin penicillin is probably the drug of choice and should if possible be used at the outset and continued until the infection is completely under control. Treatment should be continued at the earliest sign of relapse. If treatment with sulphathiazole fails after say 20–30 g. of the drug, it seems useless to persist in further administration. Probably sulphathiazole would be better used while awaiting supplies of penicillin and stopped as soon as these became available. If in this case it had been possible to start penicillin therapy early and in adequate dosage, it is likely that rapid recovery would have ensued without complication. But the ultimate recovery suggests that even when a severe infection comes under treatment at a late stage penicillin is worth a trial. The case also illustrates how an encephalitis may simulate a cerebral abscess.

I have to thank Dr. T. Pierson, medical officer of health for Plymouth, for permission to publish this case. I wish to acknowledge the help I received from the Royal Naval Medical Service, especially from Surgeon Rear-Admiral F. J. D. Twigg and Surgeon Commander T. W. Froggatt who made supplies of penicillin available and gave me much kindly advice, and to thank Surgeon Captain Lambert Rogers and Dr. Golla for permission to include reports from the Burden Neurological Institute.

CAVERNOUS SINUS THROMBOSIS
TREATED WITH HEPARIN AND SULPHATHIAZOLE

S. MUNTARBHORN, MB LOND.
RESIDENT SURGICAL OFFICER, ROYAL SURREY COUNTY HOSPITAL, GUILDFORD

SINCE Seydell's report in 1939 of a recovery from thrombosis of the cavernous sinus after sulphanilamide treatment, many others have been recorded (Morrison and Schindler 1940, Skemp et al. 1941, Eichorn 1941, Wolfe and Wolfe 1941)—some in conjunction with heparin (Lyons 1941, Schall 1941). In the following case heparin was used in conjunction with sulphathiazole.

A woman clerk of 37 was admitted to hospital 2 days after the appearance of a pimple over the left upper eyelid, which developed into bilateral orbital œdema. Temperature 103·5° F., pulse-rate 120, and respirations 30 per min. The lymph-glands on the left side of the neck were enlarged; headache was slight; no signs of meningism; no ocular palsy. A diagnosis of thrombosis of the cavernous sinus was based on the bilateral orbital cellulitis consequent on a unilateral palpebral lesion. Treatment consisted of 42 grammes of sulphathiazole given at the rate of 1 g. by mouth 4-hourly, with 1 g. of sulphapyridine soluble t.d.s. intramuscularly for 3 days. Heparin was given in an intravenous glucose-saline drip, hourly at first and continuously from the second day onward. In all 120,000 units were given over 5 days; the clotting-time during this period was 16–30 minutes.

The day after admission infra-orbital discoloration appeared on both sides, and 4 days later the temperature became normal. A culture from the lesion showed a pure growth of hæmolytic streptococci. Blood-count: red cells 4,700,000 per c.mm.; Hb 61%; CI 0·64; white cells 6700 per c.mm. polymorphs 53·1%, lymphocytes 43·1%, mononuclears 2·1%, eosinophils 1·1%, myelocytes 2·1%. From the 6th day onward the temperature remained normal. The œdema subsided completely on the right side, and the side of the lesion soon showed a similar, though gradual, reduction. This enabled us to examine the ocular movements with greater satisfaction. These, together with the fundi, were normal. She was discharged on the 23rd day with some residual incrustations over the left eyelid, which did not take long to flake off. When seen again, 5 months later, she was in good health except for occasional drawing headaches over the vault, which had arisen since the lesion. Neither visual nor oculomotor disturbances could be detected. The palpebral discoloration had disappeared completely.

The continuous intravenous infusion of heparin was found to be more economical than hourly injections. Upon withdrawal of the drip the blood-coagulation time returned to normal within half an hour (as determined by the capillary tube method); heparin was therefore eliminated rapidly from the body.

I am indebted for permission to publish the case to Mr. G. H. Steele, FRCS, under whom the patient was admitted. My thanks are also due to Dr. S. Keys for the pathological findings.

REFERENCES

Eichorn, J. P. (1941) *Ohio St. med. J.* **37**, 1076.
Lyons, C. (1941) *Ann. Surg.* **113**, 113.
Morrison, L. F., Schindler, M. (1940) *Ibid*, **38**, 94.
Schall, L. A. (1941) *Trans. Sect. Laryng. Otol. Rhin. Amer. med. Ass.* p. 17.
Seydell, E. M. (1939) *Arch. Otolaryng., Chicago*, **30**, 429.
Skemp, H. I., Afremow, M. L., Rhoads, P. S. (1941) *Ibid*, **34**, 1025.
Wolfe, C. T., Wolfe, W. C. (1941) *Arch. Otolaryng., Chicago*, **33**, 81.

ABDOMINAL TOPOGRAPHY
CLINICAL ASPECTS

FRANCIS R. BROWN
MB EDIN., FRCS
LECTURER IN CLINICAL SURGERY, ST. ANDREW'S UNIVERSITY; SURGEON, DUNDEE ROYAL INFIRMARY

GEORGE SMITH
MB ST. AND.
SURGEON-LIEUTENANT, RNVR; LATE HOUSE-SURGEON AT THE INFIRMARY

THE medical student, beginning to study the surgery of the abdomen, is perplexed to find that intra-abdominal disorders may not only give rise to different types of pain in different sites, but that there is no unanimity as to these sites. For example, in practically all the standard textbooks he learns that the pain in obstructive appendicitis may first be felt in the epigastrium or the umbilical region or in both. Similarly, it is often stated that biliary colic may be localised in either of these regions or in both. In point of fact the visceral pain element (or component) in each of these two conditions is felt in the midline of the abdomen in a definite site which is constant for each and every patient suffering from appendicular or biliary colic.

The ambiguity of pain localisation arises out of the present system of anatomical division of the abdomen into regions, following the method of Cunningham (1893) (fig. 1). To illustrate an extreme example—

A man aged 42 was admitted to the ward suffering from an appendix abscess in the right lower abdomen following acute appendicitis with perforation. He had a typical history of colicky midline pain at the onset of his illness, situated about midway between the xiphisternum and the pubic symphysis. On dividing his abdomen into the customary anatomical zones by the subcostal and intertubercular lines it was found that the patient had no umbilical zone. His pain would thus be described as being felt in the epigastrium and hypogastrium (fig. 2). This man had no deformity of the spine, ribs or pelvis.

On May 23, 1892, William Anderson read before the Anatomical Society a paper entitled "A Plea for Uniformity in the Delimitation of the Regions of the Abdomen." There were at that time 14 different schemes of delimitation into the nine historical regions of the abdomen, and it was Anderson's plea that led to the appointment of a committee of the Anatomical Society to try to get uniformity. In his address Anderson

said: "If we retain the subdivision into nine segments, it remains only to discuss the method of delimitation. Firstly, for the horizontal planes, the most ancient system and perhaps the best is that quoted in Le Clerc's *Epitome of Surgery* (published in English, 1696). Here the linea alba is subdivided into three equal parts, and the superior horizontal line lies at the junction of the upper and middle thirds, the inferior at the junction of the lower and middle thirds."

However, Cunningham's suggestion (1893) to modify Quain's "subcostal" and replace the "interiliac" by the intertubercular plane was accepted, and his is now the standard method. In 2 (one male and one female) of 16 subjects examined by Cunningham, the subcostal (Quain's) and interiliac lines coincided, while in the others the distance separating these planes varied from ½ inch to 2½ inches. It was to make the umbilical zone larger that he replaced the supra-iliac plane by the intertubercular. Using this method he found that in his 16 subjects the breadths of the resulting umbilical zones varied from 1½ to 4 inches, while the costal and hypogastric zones, as measured along the middle line in front, averaged 6 and 5 inches.

PRESENT INVESTIGATION

To investigate further the relationship which the umbilical zone bears to the distance from the apex of the xiphisternal notch (lower border of the gladiolus of the sternum) to the upper surface of the pubic symphysis, the abdomens of the first hundred patients admitted to the wards were measured. Three classes were taken—(*a*) males aged 14–80 years; (*b*) females aged 14–80 years; and (*c*) children aged 2–14 years. Class (*c*) was further divided into those aged 2–4, 5–9 and 10–14 years. All patients were normal in that there was no deformity of the spine, ribs or pelvis. Measurements were made with the patient lying on his or her back on a flat surface, the position that a patient being examined for an intra-abdominal complaint usually adopts.

RELATION AT DIFFERENT AGES BETWEEN DEPTH OF UMBILICAL ZONE (U) AND DISTANCE FROM XIPHISTERNAL NOTCH TO SYMPHYSIS PUBIS (L)

Age (yrs.)		... 2–4	5–9	10–14	15–20	21–30	31–40	41–50	51–60	61–70	71–80
Proportion U/L	M.	1/3	1/5	1/5	1/5	1/6	1/6	1/7	1/7	1/7	1/9
	F.				1/5	1/6	1/6	1/7	1/7	1/8	1/8

It will be seen from the table that as age advances there is progressive narrowing of the vertical width of the umbilical zone (fig. 3). This is especially well marked in patients of hyposthenic build. Sthenic patients tend to retain the wide umbilical zone forming a third of the distance from xiphisternum to symphysis pubis, as seen in children from the ages of 2 to 5 years.

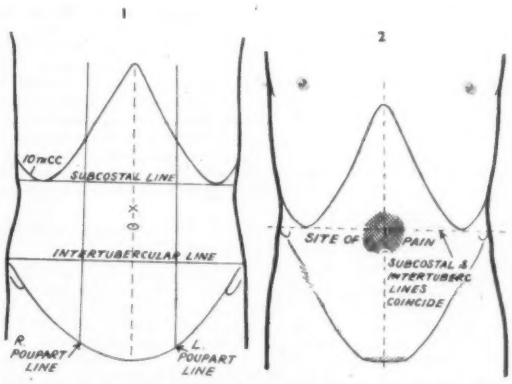


Fig. 1—Cunningham's method of abdominal topography. The disadvantage of using this method is illustrated in figs. 2, 3 and 4. Compare with fig. 5.

Fig. 2—Abdominal topography of man of 42, suffering from acute appendicular colic in the shaded area. With Cunningham's method there is no umbilical zone; the pain therefore is situated in the epigastrium and hypogastrium. The umbilicus is in the hypogastrium.

To attempt to ascribe a definite locality to a central abdominal pain is obviously impossible using the standard topography. A scheme in which the width of the umbilical (and costal) zone depends on such a variable factor as the obliquity (slope, as Cunningham termed it) and length of the ribs is of little value in determining the position of the abdominal viscera, or in localising pain produced in, or indirectly by, these viscera. It is strange that it has been so long retained. The thoracic kyphosis of advancing years and of certain occupations is no doubt an additional factor influencing the relative widths of the abdominal zones. After emphasising that appendicular colic is always localised in the umbilical region (the early embryological, or primary relative position of the appendix) (Brown 1942) it is somewhat disconcerting to find that the patient demonstrated on has in fact no such region.[1] It is obvious, too, that a high iliac crest will increase the depth of the hypogastric zone and diminish the depth of the umbilical zone, and a low iliac crest vice versa, but the size and

1. An interesting clinical observation is that operations for biliary and renal conditions in very stout patients are often surprisingly easy. The reason is that stout patients, being almost invariably of sthenic build, have a wide subcostal angle and a large intercosto-iliac space. Free access to the biliary tract and kidney is thus obtained.

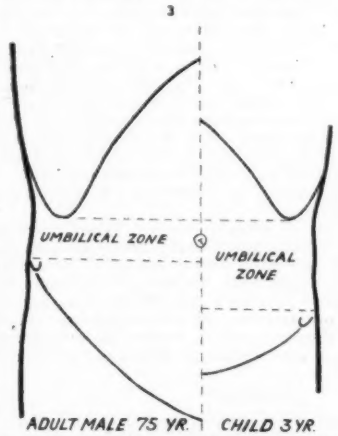


Fig. 3—Abdominal topography of a man of 75, and of a child of 3 years, showing the relative sizes of the umbilical zones—wide in the child and narrow in advanced age.

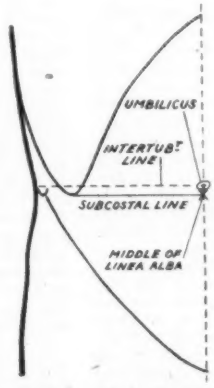


Fig. 4—Male, aged 58. The subcostal and intertubercular lines (of Cunningham) overlap by half an inch. There is no umbilical region, no lumbar region, no loin. The umbilicus is wholly in the epigastrium and half in the hypogastrium.

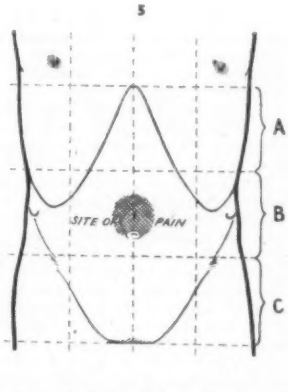


Fig. 5—The same abdomen as in Fig. 2, now divided into regions using the modification of Le Clerc's method of topography. Epigastric (A), umbilical (B) and hypogastric (C) regions are now each a third of the linea alba in depth. The site of pain is now the umbilical region. The umbilicus is in the umbilical region.

height of the iliac bones seem to be less variable than the length and slope of the ribs.

To state without qualification, as is often done, that the pain of an abdominal disorder is felt around (or above, or below) the umbilicus conveys no reliable information as to the exact position of the pain, and attempts to regionalise the umbilicus and midpoint of the linea alba, or to correlate these two landmarks with Cunningham's three zones, simply make confusion more confounded. Whichever topographical scheme is adopted the position of the umbilicus must be completely ignored.

In our series the following facts emerge (using Cunningham's topography)—

Regional position of midpoint of linea alba.—This was high in the umbilical area in fully half the cases; in the centre of the umbilical area in 21; below the centre in 9; it was in the epigastrium in 4; on the subcostal line in 7; on the intertubercular line in 1; and in the hypogastrium in 2.

Position of umbilicus relative to centre of linea alba.—In the great majority the umbilicus was below the centre of linea alba. In 8 cases the umbilicus and centre point coincided; in 4 cases the umbilicus lay above the centre point.

Regional position of umbilicus.—Low in the umbilical area in about two-thirds of the cases; middle of the umbilical area in 14, and high in umbilical area in 3; in the epigastrium in 1; on the intertubercular line in 9; in the hypogastrium in 3.

Comparative widths of three zones (as measured along the linea alba).—All three were equal in only one case, a woman aged 38 of sthenic build. The costal zone was the widest in 46; the umbilical zone the widest in 3 (children of 2 years); and the hypogastric zone the widest in 14 (3 males and 11 females).

The costal zone was the narrowest in none; the umbilical zone was the narrowest in 63; and the hypogastric zone the narrowest in 5 (3 children of 2 years, 1 of 8 years and a man of 58).

The costal and hypogastric zones were of equal width in 19; the umbilical and hypogastric zones were of equal width in 1 (a man of 40).

The costal zone was as wide as, or wider than, umbilical and hypogastric zones together in 9 cases. The hypogastric zone was as wide as, or wider than, costal and umbilical zones together in 2; in both cases the umbilicus was in the hypogastrium.

The umbilical zone occupied a third of the abdomen in 4 (3 children of 2 years and 1 woman of 38). There was no umbilical zone in 2 patients. In the man of 42 already referred to the subcostal and intertubercular planes coincided (fig. 2). In a male aged 58 years these two planes overlapped by half an inch (fig. 4). In the man of 42 the hypogastrium was not as wide as the epigastrium but contained the umbilicus. In the man of 58 the epigastrium was the narrower and the umbilicus was on the intertubercular plane *above* the subcostal plane and above the midpoint of the linea alba (on the subcostal plane). The umbilicus, therefore, was wholly in the epigastrium and half in the hypogastrium.

Recently we had in the wards at the same time three patients suffering from acute appendicitis. All had had central visceral pain at the onset of the illness. This pain was in exactly the same position in all, but in a different region in each.

A young child suffering from appendicular or small intestine colic has his pain in the umbilical region, for the simple reason that he has a relatively wide umbilical region (fig. 3). The same patient, as an adult, with the same complaint may have his pain in any one of the three central regions, in any two, or in all three. It mainly depends on the adult length and slope of his ribs, and yet the patient will maintain, rightly, that his attacks of pain have always been felt in the same position.

Renal pain is usually described as being localised in the lumbar region or in the loin. If the term "lumbar region" is used in the topographical sense, it is obvious from our investigation that such a description must in many cases be inaccurate, since a considerable percentage of people have a very narrow umbilical zone (which includes the lumbar region), and some have no umbilical zone. This difficulty may be avoided by stating that renal pain is felt in the loin, but that also is not an accurate or desirable description because the loin has not easily identifiable boundaries, and because in some cases the last rib and iliac crest overlap. Where the subcostal and intertubercular planes coincide, an accurate description of renal pain would run somewhat like this: "The pain was situated in the right hypochondrium and right iliac regions because the patient has no right lumbar region because the subcostal and intertubercular planes coincide because the ribs are longer and more oblique than is usual, and because the costal and hypogastric zones are of equal width." Not a desirable method of description, but how can it be avoided with our standard scheme of topography?

SUGGESTED DIVISION OF THE ABDOMEN

It is necessary for the teaching of anatomy and surgery to have a rational and convenient method of subdividing the abdomen into regions; and above all the method chosen should be helpful in clinical practice and free from ambiguity. The present names of the nine historical regions should be retained as they serve a definite end for descriptive purposes. To provide a method of dividing the abdomen into regions to which pains of the visceral type particularly may be attributed more exactly, the length of the linea alba should be divided into thirds irrespective of bony landmarks—as first suggested by Le Clerc in his Epitome of Surgery. The three zones thus defined should be further subdivided by the two vertical lines in general use—viz., two perpendicular lines reared from the midpoints of the inguinal ligaments (fig. 5).

If such a scheme were adopted one could dogmatise by saying that visceral pain from the embryonic foregut derivatives—stomach, duodenum, biliary passages and pancreatic ducts—would always be felt in the midline in the upper third (in the epigastrium). Similar pain from mid-gut derivatives, for example the appendix, would always be felt in the middle third (umbilical region), and pain from the hind-gut derivatives, such as colon, in the lower third (the hypogastrium).

The obvious advantage of this scheme over that of Cunningham is that it ensures that every patient will retain the well-proportioned umbilical zone of childhood irrespective of the length and slope of his ribs or of the height of his iliac crests.

The ambiguous indefinite descriptions prevalent in current medical literature and in clinical teaching regarding the localisation of abdominal pain would thus be avoided and replaced by clear and exact descriptions. For example, using the suggested method, one could state that acute appendicular colic is invariably localised in the umbilical region, whereas in chronic appendicitis pain may be present in the epigastrium. In the acute case the central visceral pain is produced in the appendix by hypercontraction of its muscular wall and is retrojected to the primary relative position of the appendix—i.e., the umbilical region. In the chronic case the epigastric pain is not produced in the appendix but by reflex pylorospasm—the ileo-gastric syndrome (Braithwaite 1942)—and hence the difference in localisation. The later local pain of acute appendicitis, usually in the right iliac fossa, is a somatic pain due in the first place to chemical irritation of the adjacent parietal peritoneum. Thus we can state, as a general rule, that in visceral pain it is the early embryological position of the viscera we must bear in mind, while in somatic pain it is the permanent position of the viscera which is important. In other words, visceral pain tells us which segment of gut is at fault, and somatic pain tells us exactly where the lesion is to be found.

A clear conception of how these two types of pain are produced and what they signify adds interest to the study of abdominal pain, and is essential for early, accurate and logical diagnoses. In spite of the teaching of Hurst (1911), Morley (1931) and others it is rarely that one meets a practitioner who is really interested in the study of abdominal pain; hence the continued high mortality, due to late diagnosis, in many abdominal disorders.

SUMMARY

The standard system of anatomical division of the abdomen into regions is of little value in clinical practice, for it is based on landmarks whose position varies with age, build, degree of kyphosis, &c.

It is suggested that the present system be replaced by a modification of Le Clerc's system. The linea alba is

divided into thirds by horizontal lines, and two perpendicular lines are reared at the midpoints of the inguinal ligaments.

With this system of abdominal topography the exact site of abdominal pain can be definitely and accurately described in unambiguous terms which can be understood by everybody.

We are indebted to Prof. J. C. Brash, anatomical department, Edinburgh University, for a helpful personal communication.

REFERENCES

Anderson, W. (1892) *J. Anat. Physiol.* **26**, 543.
Braithwaite, L. R. (1942) *Brit. J. Surg.* **30**, 15.
Brown, F. R. (1942) *Brit. med. J.* i, 543.
Cunningham, D. J. (1893) *J. Anat. Physiol.* **27**, 257.
Hurst, A. F. (1911) The Sensibility of the Alimentary Canal, London.
Morley, J. (1931) Abdominal Pain, Edinburgh.

THE MENINGOCOCCAL-ADRENAL SYNDROME

FIVE CASES WITH ONE RECOVERY

J. MACDONALD HOLMES M D LEEDS, M R C P
J. MACFARLANE COWAN M B GLASG.
PHYSICIANS, STAFFORDSHIRE GENERAL INFIRMARY

THE clinical concept of meningococcal infection has in the past been dominated by meningitis, its commonest manifestation, but in recent years there has been an increase in the recognition of meningococcal septicæmia without meningitis. There is an extensive literature devoted to the chronic type of meningococcal septicæmia characterised by intermittent pyrexia, petechial and maculopapular skin eruptions and sometimes nodular lesions resembling erythema nodosum (Applebaum 1937, Heinle 1939, Stott and Copeman 1940, Dickson et al. 1941, Copeman 1942). The acute fulminating type of septicæmia with adrenal hæmorrhage, with which we are concerned in this paper, is still regarded as comparatively rare and not more than a hundred cases have been recorded (Banks and McCartney 1943). Since death usually occurs in a matter of hours it may not be recognised as frequently as it should be outside fever hospitals or other large centres.

Meningococcal infections may now be classified in the following main groups, all of which should be easy to recognise if the characteristic clinical pictures be borne in mind (Harries 1942, Banks and McCartney 1943).

1. *Meningococcal septicæmia.*—(*a*) Acute fulminating septicæmia, with extensive purpuric eruptions and adrenal hæmorrhages, death often occurring from circulatory failure in a few hours from the onset. (*b*) Chronic septicæmia, with intermittent pyrexia, petechiæ and skin lesions resembling erythema nodosum, occasionally arthritis, and later development of meningitis.
2. *Meningitis.*—Acute, subacute, and chronic. These cases usually present no difficulty in diagnosis.
3. *Encephalitis.*—Although most cases of meningitis must from the nature of the infection have some degree of encephalitis, in some instances the intracerebral lesions are far in excess of the meningitic. Deep coma may be present and the signs of meningitis may be masked. The encephalitic type of onset often accompanies the acute adrenal syndrome, and the characteristic purpuric rash and circulatory failure are seen in both. Banks and McCartney (1943) state that, in epidemic times at least, there is a pure encephalitic syndrome, a pure adrenal syndrome, and a mixed encephalitic-adrenal syndrome, any of which may also include nasopharyngitis, septicæmia, and meningitis.

The adrenal syndrome, with which we are mainly concerned, is often called the Waterhouse-Friderichsen syndrome, but there is little justification for retaining this name on historical grounds, and even less as a descriptive term. The "meningococcal-adrenal syndrome" seems to us a concise and adequate name for the condition.

The clinical picture of the pure adrenal syndrome is very definite and once recognised cannot be forgotten. There is a sudden onset of a fulminating septicæmia, with a cyanotic pallor resembling the "heliotrope cyanosis" which has been described in connexion with influenzal septicæmia. Later multiple cutaneous petechiæ and possibly massive purpuric hæmorrhages appear. The pulse is rapid, of poor volume, and may be almost imperceptible. The blood-pressure is very low. Respiration is rapid and shallow, and may become Cheyne-Stokes in type. Consciousness may remain clear until the end, but as in cases 2 and 3 it may be slightly dulled. Death usually occurs within 24 hours of the onset in untreated cases. The difficulty in this type of case is in making a diagnosis and beginning treatment at the earliest possible moment. There is usually no time for laboratory investigation and the diagnosis must be made on clinical grounds alone.

When the adrenal syndrome occurs in cases with the presenting signs of meningitis or meningo-encephalitis it may be overlooked, but the above-mentioned clinical picture is present in variable degree. We would advocate that frequent blood-pressure readings be taken in all cases of severe meningococcal meningitis, since an abnormally low blood-pressure is the only reliable early sign of adrenal failure. If treatment be withheld until the characteristic cyanosis and rapid shallow respiration appear it may be too late to be effective. Recoveries from apparent adrenal lesions have been reported by Harries (1940) in three cases, Carey (1940) one case, and Banks and McCartney (1943) three cases.

Biochemical investigations in such cases have been scanty. There is naturally little time for extensive investigation of the blood chemistry. Magnusson (1934) found hypoglycæmia in four fatal cases and a non-protein nitrogen of 105 mg.% in one. He also quotes another case of Bamatter's in which the blood-sugar was normal, but the non-protein nitrogen was 131 mg.%. In this case also the serum sodium was raised (635 mg.%) and the serum potassium was normal (24 mg.%). Banks and McCartney in one patient who recovered found a diminished alkali reserve and an increased blood-urea.

CASE-REPORTS

The first three cases are remarkable in that they arose in the same family, consisting of husband, wife, and six children, and all ended fatally within four days. On the day that the first case occurred a child in a neighbouring house had died within a few hours of "purpura fulminans," but no details of this are available. A woman who had been in intimate contact with all four children was found to have type II meningococci in her nasopharynx and type II meningococci were also isolated from cases 1 and 3. No other carrier was found in either household and no other cases of meningococcal infection had been reported in the neighbourhood. It is almost certain that the death from "purpura fulminans" was due to the meningococcal adrenal syndrome.

CASE 1.—Male, aged 4 years. Admitted under J. MacD. H. on Dec. 7, 1943. Sudden onset of headache, vomiting, and a blotchy erythematous rash the previous evening. By the morning of Dec. 7 the rash had become deep purple and the patient was semistuporose. Definite signs of meningitis were present on admission and there was a petechial and massive purpuric rash over the whole body, most evident on the arms and legs. T 102·2° F, P 148, R 40, deep and stertorous. Lumbar puncture gave a slightly turbid fluid: pressure 300 mm., cells 600 per c.mm. (all polymorphs), chlorides 620 mg.%. Many extra- and intra-cellular gram-negative diplococci were seen in the stained films and culture gave type II meningococci. Soluble sulphapyridine 1 g. was given intravenously in 20 c.cm. of normal saline and 3 g. of sulphamezathine by mouth every four hours.

Dec. 8: meningitic signs less marked, temperature normal, but child still stuporose.

Dec. 9: still stuporose. No further pyrexia or purpura, but cyanosis present and respiration rapid and shallow. Pulse-rate 140, BP 85/70 mm. Hg. Rectal salines and 10 mg. of desoxycortone acetate given intramuscularly.

Dec. 10: no improvement. Pulse imperceptible. Some of the purpuric patches necrotic. Further 20 mg. of desoxycortone given and more saline. Death early in morning of Dec. 11.

Necropsy.—Intense lividity. Thymus present, weight 14 g. Lungs very congested and œdematous. No petechiæ on pleuræ or pericardium. Gross enlargement of mediastinal lymph-glands, which are livid in colour. Mesenteric glands also enlarged and livid. Small amount of free fluid in peritoneal cavity. Spleen normal in size, soft, weight 45 g.

Retroperitoneal tissues intensely œdematous, particularly around kidneys. Both adrenals show focal hæmorrhages, with intervening areas of normal appearance. Brain intensely swollen and congested. Thrombosis of superior longitudinal sinus present and cortical veins very distended. Moderate amount of yellow purulent exudate in sulci.

Sections.—Adrenals show areas of recent hæmorrhage which have infiltrated the cortex and medulla without entirely destroying the structural outline. Brain shows a moderate degree of perivascular lymphocytic cuffing. Hyaline thrombi seen in small vessels. Thymus shows no histological abnormality.

CASE 2.—Female, aged 8 years, sister of the above. Admitted under J. M. C. on Dec. 8, 1943. Seen at home shortly before admission. Persistent vomiting and slight headache had begun 4 hours before; 2 hours later a widespread petechial rash, macular in places, developed. Mentally the child was slightly disorientated but could answer questions distinctly. No neck-rigidity. On admission to hospital the child had become comatose and the pulse was almost imperceptible. T 103° F, R 40. Pulse-rate and BP not obtained. Soluble sulphapyridine 1 g. given intramuscularly. CSF not under increased pressure, cells 1 per c.mm., protein 30 mg.%, chlorides 650 mg.%. No organisms seen in smears. Culture sterile. Died 3 hours after admission.

Necropsy.—Intense lividity. Generalised petechial and patchy purpuric rash, most marked on face, shoulders, abdomen, and legs. Thymus enlarged, weight 41 g. Œdema of mediastinum, with enlargement of tracheobronchial and cervical glands, some of which are livid on section. Lungs congested and grossly œdematous. Small amount of fluid in left pleural cavity. Heart: some ante-mortem clot in left ventricle: a few pericardial petechiæ and early pericarditis at base. Gross enlargement of mesenteric lymph-glands with hæmorrhage into some. Œdema of mesentery and retroperitoneal tissues, especially around kidneys. Bilateral suprarenal hæmorrhages with complete destruction of medulla of both glands, but no rupture of capsules. Spleen enlarged and congested, weight 177 g. Brain congested, but no other macroscopic abnormality seen.

Sections.—Adrenals show recent substantial hæmorrhage almost entirely replacing the medulla of both glands. Cerebral cortex shows no evidence of encephalitis. A mesenteric lymph-gland shows recent hæmorrhage. Thymus appears normal.

CASE 3.—Female, aged 15 years. Sister of the above two. Admitted under J. M. C. on Dec. 10, 1943, about ½ hr. after onset of vomiting and pyrexia. On admission T 102·8° F, P 140, R 40. Dusky cyanosis present. BP 90/70 mm. Hg. Slightly drowsy, but completely conscious, with no signs of meningitis. Blood was taken for culture and later type II meningococci were recovered. Soluble sulphapyridine 1 g. given intramuscularly every 4 hours, with 10 mg. of desoxycortone acetate. Plentiful glucose drinks containing sodium chloride and sodium bicarbonate also given and rectal salines. By the evening a profuse purpura had developed and the cyanosis was more pronounced. No improvement occurred and the child died 20 hr. after the onset, retaining consciousness almost to the end.

Necropsy.—Generalised intense lividity, with numerous small purpuric hæmorrhages. Thymus enlarged, weight 25 g. Lungs congested and œdematous. Small amount of fluid in left pleural cavity and a few pleural petechiæ. Numerous pericardial petechiæ. No gross enlargement of mediastinal or mesenteric lymph-glands. Retroperitoneal tissues very œdematous. A few petechiæ on mesentery and serous surface of intestines. Both adrenals replaced by massive hæmorrhages, but no rupture of capsules. Spleen slightly enlarged, weight 115 g. Brain œdematous and congested, but no evidence of meningitis.

Sections.—Both adrenals show massive recent hæmorrhages. Brain: a hyaline thrombus seen in one vessel. Spleen congested, many polymorphs seen in pulp. Thymus: no abnormality seen.

CASE 4.—(We are indebted to Dr. J. Sowerbutts and Dr. A. J. Rhodes for the report of this case.) Male, aged 3¼ years, an inmate of a children's home, was noticed to be slightly irritable on the night of Dec. 18, 1943. At midnight he soiled his bed and was seen by a nurse, who noticed no other abnormality. At 6 AM next morning he was found dead and with a generalised purpuric rash. Dr. Sowerbutts mentioned the case to one of us on the telephone, who suggested a diagnosis of meningococcal-adrenal syndrome. A post-mortem examination was carried out the same morning by Dr. A. J. Rhodes, who has kindly given the following details.

Necropsy.—Well-marked lividity. Profuse petechial and in parts purpuric-hæmorrhagic rash over limbs and trunk. Blisters on front of right shin. Moist area on dorsum of left foot where it had been denuded of epithelium. Numerous petechial hæmorrhages under serous coat of intestines, in mesentery, mediastinum, pericardium and pleuræ. Heart and lungs normal. Adrenals: well-marked hæmorrhages completely destroying normal architecture. Brain markedly congested with flattened convolutions. CSF turbid. Dr. Rhodes concluded, from the absence of any primary focus of infection, that death was due to fulminating meningococcal septicæmia with adrenal hæmorrhages. No attempt to isolate the meningococcus was made because the body was cold.

This case occurred in a town 12 miles away from the others and no contact between them could be traced. Nasopharyngeal swabs taken from 9 staff and 31 inmates of the children's home revealed no meningococci, but prophylactic sulphapyridine had been given to everyone during the previous 24 hours.

CASE 5.—Female, aged 21 years. Admitted under J. MacD. H. on Dec. 24, 1943, with severe meningitic symptoms. Very restless and irritable, but conscious. Slightly cyanosed, but, apart from a few rose-coloured spots which faded on pressure, no rash. Two large blisters on dorsum of left foot. T 101° F, P 140, R 26, BP 90/80. Illness had begun early the previous day with vomiting and a rigor. Later that day intense headache and cerebral irritation developed. CSF pressure 300 mm., fluid very purulent. Gram-negative diplococci found in smear. Soluble sulphapyridine 2 g. given intravenously and followed by 2 g. of sulphathiazole every 4 hours by mouth. Blood-urea 63 mg.%; blood-sugar 0·082%; serum-potassium 39·2 mg.%; serum-sodium 407 mg.%.

Dec. 25: T 100° F, P 124, R 38. Much less irritable, but confused. Cyanosis has increased. BP 90/80. Desoxycortone acetate 40 mg. given intramuscularly, and intravenous drip of 10% glucose-saline begun.

Dec. 26: T 100·5° F, P 110, R 32, BP 98/85. Further 10 mg. of desoxycortone given intramuscularly. Three litres of glucose-saline given intravenously in past 36 hours.

Dec. 27: T 97° F, P 88, R 22, BP 120/80. Slight generalised œdema, probably due to saline infusion and desoxycortone. Urinary output normal. No albuminuria. Mental condition normal, but still has slight neck-rigidity and headache. Sulphathiazole stopped. Total dosage of sulphonamides 13 g.

Dec. 28: T 98° F, P 76, R 20, BP 125/65. No headache. Blood-urea 27 mg.%; serum-potassium 13·6 mg.%; serum-sodium 343 mg.%; blood-sugar 0·112%. Further progress was uneventful. Intravenous glucose-tolerance test done on Jan. 1, 1944, gave the following normal result—fasting blood-sugar 0·118%; 20 g. of glucose given intravenously; blood-sugar after ½ hour 0·200%, after 1 hour 0·123%, after 1½ hours 0·118%, and after 2 hours 0·108%.

This patient was assumed to have adrenal lesions in view of the lowered blood-pressure, low blood-sugar, raised respiration-rate and cyanosis, but it must be admitted that the signs of the adrenal syndrome were not pronounced. The only definite cutaneous lesions were the blisters on the left foot and a few rose spots. Some of the cyanosis may have been due to the sulphathiazole, but it was present before this was given and was more pronounced than is usual in sulphonamide therapy of similar dosage. Culture of the blood and cerebrospinal fluid was not attempted. There was no traceable contact with the other cases.

DISCUSSION

The various acute manifestations of meningococcal infection are well illustrated by these five cases. Case 1 is an example of the mixed meningoencephalitic adrenal syndrome. Cases 2, 3 and 4 are probably all the pure adrenal syndrome, or with only slight cerebral lesions. In case 5 the adrenal lesion is hypothetical, but the meningitis and septicæmic symptoms were very pronounced.

It is not clear what factors are responsible for the adrenal syndrome. In the present series there was no epidemic of meningococcal infection in the district, although a few mild sporadic cases had occurred. The incidence of the adrenal syndrome is therefore high. In a small epidemic of 23 cases in this district in 1940 there

was only one case with the clinical features of the adrenal syndrome. It has been suggested that the acute fulminating septicæmic cases occur early in an epidemic before any herd immunity has developed. The prophylactic administration of small doses of sulphapyridine to those in contact with these cases may have prevented further spread of the infection.

The post-mortem findings in many of the recorded cases suggest that death is due to circulatory collapse from a severe diminution in blood-volume. Three of our fatal cases showed widespread œdema of the lungs and interstitial tissues. This was also noted in 3 cases by Morison (1943). In case 5 œdema did in fact appear, but it was attributed to the large volume of saline infused and the desoxycortone. The chemical findings in case 5 are difficult to interpret, but may be due to dehydration in a stuporose patient with a high pyrexia. Another feature present in 2 of our cases was enlargement of the thymus and lymphatic glands. This was not due to the associated œdema. It was first mentioned by Rabinowitz (1923), again by Magnusson (1934), and was also noticed by Morison in his 3 cases. In view of the short duration of the illness and the apparently normal histological appearance of the thymus and lymphatic glands the enlargement must have been pre-existing. It is possible that the meningococcal adrenal syndrome occurs only in individuals with an inherent structural and functional deviation from normal in their thymo-lymphatic system and adrenal glands. This suggestion has little to support it as yet, but the presence of thymolymphatic enlargement in some of the more carefully recorded cases appears to be more than coincidence and worthy of detailed investigation. Much remains to be determined about the blood chemistry and hæmodynamics of the condition. It is doubtful whether the severe septicæmia or the adrenal lesions in themselves are entirely responsible for the rapidly fatal progress of these cases.

It is clear from the study of this series of cases and others that the successful treatment of the fulminating type of meningococcal septicæmia with adrenal lesions is impossible unless vigorous measures be taken to combat the circulatory failure. The sulphonamide drugs alone appear to be useless. The meningococci isolated from our cases were found to be non-resistant to sulphonamides in laboratory cultures, but in case 3, although sulphapyridine was given within half an hour of the onset of symptoms and 8 hours before the development of purpura, it had no effect on the rapid progress of the illness. In the few recorded instances of successful treatment of the condition the sulphonamide therapy has been supplemented by large intravenous infusions of saline or glucose-saline and injections of adrenal cortical extract or desoxycortone. If the cause of the profound circulatory collapse be a reduction in blood-volume it would be reasonable to use plasma-transfusion rather than glucose-saline.

SUMMARY

Five cases of the meningococcal-adrenal syndrome are described, four fatal and one which recovered, the diagnosis being presumed.

In three of the fatal cases gross œdema of the interstitial tissues was found. This lends support to the view that death is in large measure due to circulatory collapse from severe diminution in blood-volume.

In two of the fatal cases thymolymphatic enlargement was found, and it is suggested that this may be a factor in determining the susceptibility of the adrenals to the infection.

We are grateful to Dr. J. L. Edwards for the bacteriological and histological examinations.

REFERENCES

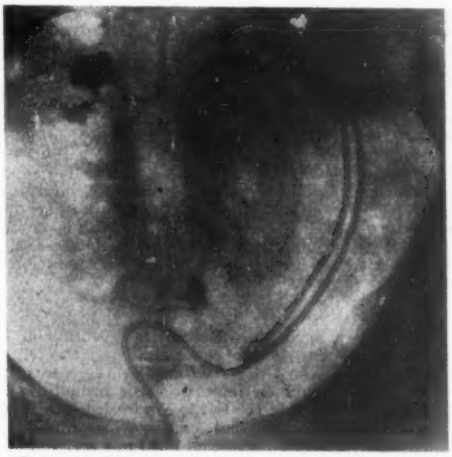
Applebaum, E. (1937) *Amer. J. med. Sci.* **193**, 96.
Banks, H. S., McCartney, J. E. (1943) *Lancet*, i, 771.
Carey, T. N. (1940) *Ann. intern. Med.* **13**, 740.
Copeman, W. S. C. (1942) *Brit. med. J.* i, 760.
Dickson, R. C., McKinnon, N. E., Magner, D., McGillivray, N. B. (1941) *Lancet*, ii, 631.
Harries, G. E. (1940) *Proc. R. Soc. Med.* **33**, 561. (1942) *Brit. med. J.* ii, 423.
Heinle, R. W. (1939) *Arch. intern. Med.* **63**, 575.
Magnusson, J. H. (1934) *Acta pædiat. scand.* **15**, 396.
Morison, J. E. (1943) *Lancet*, i, 800.
Rabinowitz, M. (1923) *Amer. J. med. Sci.* **166**, 513.
Stott, A. W., Copeman, W. S. C. (1940) *Lancet*, i, 1116.

URETERIC CALCULUS
TREATED BY REVERSED CATHETERISATION

R. C. PERCIVAL, FRCS, MRCOG
SURGEON LIEUT.-COMMANDER, RNVR
From one of HM Hospital Ships

THE ureteric calculus recently impacted and showing no sign of progress under observation is not a rarity. Several procedures have been described for dealing with such cases, but often the special instrument required is not available or the method advised is unsuccessful. Such procedures are the passage of ureteric dilators, spiral dislodgers, balloons, and bougies, the retrograde injection of lubricants, and the use of various ureteric stimulant and antispasmodic drugs.

Each of these methods has been successful in some cases, but no one method is sufficiently reliable to merit use as a routine. On a tropical station particularly, where such cases are likely to be met relatively often, it is desirable both from the patient's and "Service" aspect to treat them by instrumental methods rather than by open operation. All cases which have had



Reversed catheter engaging a small recently impacted ureteric calculus.

uretero-lithotomy performed on this station have been invalided for service in a cool climate. The purpose of this paper, therefore, is to draw attention to a useful yet simple method of dealing with the small recently impacted ureteric calculus.

The method, of which the one to be outlined is only a slight modification, was first described by Finney [1] of South Carolina, who found it successful in 49 out of 50 cases. In no case did appreciable trauma or reaction occur. Apart from an annotation in THE LANCET (1942, i, 298), I have seen no reference to Finney's original article; nor have I met anyone who has either known or confirmed the efficacy of the method.

My experience amounts to three cases only, two of which were entirely successful, while the third showed promise of a good ultimate result when the patient was transferred owing to Service reasons. Nevertheless, its simplicity and safety, and the excellent report of its originator, seem to offset the lack of a larger series.

The method is as follows. A long piece of fine silk is passed through the tip of a no. 6 X-ray catheter and tied, the knot being as small as possible. The silk passes along the outside of the catheter and then enters the lumen via a small needle-hole about the level of the 15 cm. mark. It is conveniently made to enter and run through the remainder of the catheter by attaching it to the stilette, which is then withdrawn. In Finney's original description the silk remained external to the catheter throughout its length, but I have found that the silk becomes taut and somewhat hindered in its passage up the ureter owing to frictional drag on the

1. Finney, R. P. *J. Amer. med. Ass.* 1941, **117**, 2129.

silk in the catheter channel of the cystoscope. Also, acting like the string of a bow, it tends to cause some trauma to the ureteric orifice (and no doubt to the ureter higher up) on traction. Moreover, traction made the unprotected silk produce penile pain by cutting into the urethral mucosa. Both disadvantages are easily overcome by passing the thread along the lumen of the catheter. The stilette is reintroduced fully before use. Cystoscopy is now performed and the catheter passed up the ureter. If there is difficulty in passing beyond the stone, and this is likely to be the chief obstacle, success has been achieved by withdrawing the stilette and injecting saline at the same time as the catheter is gently pushed upwards. The stilette is again introduced. When the catheter has reached the kidney pelvis the stilette is withdrawn for 2–3 inches, and a loop formed by pulling on the silk and pushing the catheter further up. The tip of the catheter is thus made to re-enter the ureter and begin a reversed course. The stilette is now removed and the silk and catheter together gently drawn down until the resistance of the calculus is met. An X ray is taken at this stage to confirm the relation of the reversed catheter with the stone, which may be engaged by the tip of the catheter or ensnared in the loop, the latter being the more satisfactory. The cystoscope is now removed and the patient returned to bed. A small traction-scale is attached to the silk and instructions left for a pull of 2 lb. to be applied for a short time every 2–3 hours. At the end of 24 hours the patient is given a short anæsthetic (gas and oxygen) in his bed, and a pull of 5 lb. is applied by the surgeon himself. Should this prove unsuccessful the procedure is repeated for a further 24 hours. If the calculus has not been dislodged at the end of this period further traction is inadvisable, and the catheter should be removed unless open operation is contemplated forthwith. Removal is achieved by releasing the silk and pulling on the catheter. In Finney's series of 50 cases, only one open operation was necessary.

CASE-RECORD

A petty officer, aged 38, was admitted on July 6, 1943, complaining of sudden sharp colicky pain in the left iliac fossa, radiating to the tip of the penis. There was slight frequency but no pain on micturition or hæmaturia. He had had a similar pain in the left loin a week before, lasting only a few hours. Physical examination revealed no abnormal signs, but the urine contained pus and red blood-cells and calcium oxalate crystals. X ray revealed a small rounded irregular opacity near the tip of the left ischial spine, which intravenous pyelography showed to be in the line of the lower end of the ureter. There was also slight dilatation of the ureter throughout its length.

On the 10th, at cystoscopy, there were slight œdema and petechiæ around the left ureteric orifice (LUO). Chromoscopy was normal on both sides except that the left showed a much less forceful efflux than the right. A no. 6 ureteric catheter was then passed up the left ureter and met initial obstruction at 5 cm. This was passed and 5 c.cm. of sterile liquid paraffin injected above and below the stone. The patient had no symptoms over the next six days and X ray showed no change in the position of the calculus.

On the 16th cystoscopy was again performed and a no. 6 X-ray catheter, with silk ligature attached, was passed up to the kidney pelvis, reversed, and gently drawn down until obstruction was met (see figure). Gentle traction now caused the efflux of debris from the LUO and produced a slight increase in its surrounding swelling, with some pain in the left iliac fossa. The patient was returned to bed and intermittent traction applied over the next 48 hours. He had no discomfort beyond aching in the left iliac fossa during actual traction, and voided urine normally. At the end of this period he was again cystoscoped in order to watch the LUO during withdrawal of the calculus (this procedure is unnecessary normally). Steady 5 lb. traction was applied and after about 10 seconds the calculus, surrounded by much debris, emerged from the LUO, followed by the catheter and silk. X ray now showed the calculus lying in the bladder and the ureter clear.

On returning to the ward the patient passed the calculus in the first specimen of urine voided. It was grey with a finely irregular crystalline surface, and measured 1 × 0·5 cm. There was neither pain nor hæmaturia after this procedure. Further cystoscopy on July 26 showed a rather patulous LUO but no œdema and a normal efflux. A ureteric catheter passed without obstruction to the kidney pelvis but retrograde pyelography showed slight dilatation still of the left ureter, with a small pocket at its lower end. The urine became clear of pus cells on Aug. 2, and he was discharged to duty on Aug. 5.

DISCUSSION

The advantages of this method are obvious—it is simple, effective, and as shown by Finney in his 50 cases has low risk to the patient. If the operation is successful the patient is soon fit to return to duty. If it fails, uretero-lithotomy may still be undertaken in the usual way, but as a rule invaliding to a cool climate is necessary later. In the case here described lithotomy would have been indicated if reversed catheterisation had failed, for there was beginning dilatation and infection of the urinary tract with no progress of the calculus, which later pyelography showed to be lodged in a small pocket.

The chief difficulty to be overcome in most instrumental methods is in manipulating the instrument past the stone. If this is not possible the method usually fails. In using the catheter as a lithotrite, saline can be injected while manipulations are made, and passage is thereby facilitated. The small stone offering complete obstruction to a catheter is likely to be passed spontaneously, while the one that allows the catheter to pass probably lies partially in a pocket and stands a high risk of remaining there. The size of the stone would naturally influence the type of treatment adopted, and in the cases treated personally the stones have exceeded 1 cm. in diameter. Finney, pointing out the dangers of applying too much traction, emphasises that *in no case should an attempt be made to extract the stone immediately*. His method is essentially one of gradual dilatation and is based on experimental work carried out on large dogs. He found that in every case a ureter would stand a pull of 5 lb. but none would stand 10 lb. Trauma to the mucosa was found to be minimal both experimentally and clinically. There is no tendency for the catheter loop to obstruct the ureter—in fact it aids drainage, since urine will pass alongside it and escape, as the absence of pain after catheterisation demonstrates.

If the method fails and there is difficulty in removing the catheter (this never happened in the cases reported) no harm is done; in fact Finney suggests that it is probably better to leave the catheter in place before proceeding to open operation. Traction on the catheter by an assistant during the operation will then simplify identification of the ureter and calculus.

SUMMARY

Attention is drawn to a simple and effective method of extracting a small recently impacted ureteric calculus.

The principle of the method is gradual ureteric dilatation through intermittent traction on a ureteric catheter made to form a loop which grips the stone.

In 50 cases reported elsewhere by Finney, no complication of any kind was encountered.

One of three personal cases illustrating the method is described.

I wish to thank the Medical Director-General of the Navy for permission to publish this article.

WELFARE EQUIPMENT DEVELOPMENT ASSOCIATION.—An association of manufacturers and distributors, under the chairmanship of Mr. Tudor Davies, was set up at a meeting held in London on Dec. 6. The speakers included Dr. R. A. Galway, who suggested many ways in which the association could coördinate the efforts of manufacturers and the needs of welfare officers. The acting hon. secretary of the association is Mr. A. E. Hinds, 61, St. Paul's Churchyard, EC4.

MIDGE CONTROL IN SCOTLAND.—The scientific advisory committee of the Secretary of State for Scotland has appointed a subcommittee under the chairmanship of Brigadier F. A. E. Crew, FRS, to deal with this problem. The members are: Mr. A. E. Cameron, D SC, Mr. J. A. Downes, Mr. Guy Morison, Prof. A. D. Peacock, D SC, and Mr. A. J. Purves (secretary), Department of Health for Scotland, St. Andrew's House, Edinburgh, 1.

Medical Societies

BRITISH ORTHOPÆDIC ASSOCIATION

THE annual meeting of the Association was held in London on Dec. 15 and 16, under the presidency of Mr. ST. J. D. BUXTON. On the second day there was a discussion on amputations and limb-fitting at Queen Mary's Hospital, Roehampton.

VASCULARISATION OF MUSCLES

Prof. W. E. LE GROS CLARK said it is well known that most muscles are supplied by two or more main blood-vessels, and injected specimens show clearly that their branches effect a number of anastomotic connexions inside the muscle. But such material gives no real indication of the adequacy of these connexions for the establishment of a collateral circulation; nor does it tell us whether interruption of one of the main vessels (or of one of their intramuscular branches) may lead to a localised ischæmia severe enough to be of practical importance. These problems have been studied in rabbits by the ligature of blood-vessels supplying muscles, the results being assessed partly by subsequent histological examination, and partly by using a highly diffusible dye, bromo-phenol blue. This dye rapidly colours all normal muscles after intravenous injection, and is of particular value for assessing the physiological efficiency of the circulation, since it indicates the degree of interchange between the capillaries and muscular tissue even when a feeble circulation in the main blood-vessels may, in fact, be still present. The efficiency of the anastomotic connexions was found to vary considerably in different muscles. In some, such as the tibialis anterior, ligature of one of the vessels of supply leads to a sharply defined area of ischæmia. For example, two days after ligature of the lower vessel of supply to the tibialis anterior, intravenous injection of bromophenol blue stains the upper half of the muscle to a normal intensity, but the lower half remains almost entirely unstained, and the boundary between the two areas is sharply defined. The normal vascularisation of the lower half of the muscle is not restored for about a week. If both of the main vessels supplying the tibialis anterior are ligatured, revascularisation is delayed for a fortnight. In experiments in which small steel ball-bearings were shot through the adductor muscles of rabbits at velocities of 250–1000 metres per sec., localised and sharply defined areas of ischæmia were produced, as the result of interruption of the muscular vessels (probably associated with some local vascular spasm). Histological study of the unstained areas of muscle in these experiments showed that most of the muscular tissue had undergone necrosis. The necrotic tissue is removed remarkably quickly by the invasion of granulation tissue with abundant macrophages, and its removal is soon followed by the regeneration of new muscle-fibres. In this way, a large part of the damaged muscle appears to become reconstituted. More experimental work is required to determine whether this regeneration is more than a temporary phenomenon, and whether it leads to the formation of functional muscular tissue. The experiments show that in the muscles of the rabbit there is a remarkable potentiality for regeneration in devascularised tissue, and that, in spite of anastomotic connexions, the interruption of one vessel of supply to a muscle (or one of its branches) may lead to a relatively extensive and well-defined area of ischæmia lasting for several days. This is important in relation to the infection of muscles in war wounds.

DENERVATION AND RE-INNERVATION OF VOLUNTARY MUSCLES

Dr. RUTH BOWDEN demonstrated the importance of maintaining function in voluntary muscles denervated as a result of peripheral nerve injury. In such cases atrophy is most rapid in the early stages of paralysis, when there is an increase of connective tissue, associated with wallerian degeneration in nerve-fibres, and obliteration of the terminal Schwann tubes and motor end-plates. Eventually, as muscle-fibres continue to atrophy they are replaced by fat and connective tissue. Finally the muscle may resemble tendon. Up to a year after denervation one may expect a fair degree of functional recovery; nevertheless, the atrophy and replacement by connective tissue starts from three months onwards. The reversibility of the changes in muscle depends on such things as sepsis, age, mobility of the limb, and physiotherapy, as well as on the nature of the lesion in the nerve itself. The electrical changes in denervated muscle are due not so much to degeneration as to atrophy. The more sluggish response to galvanic stimuli is due to the impulse being conducted through muscle instead of through nerve. The response may disappear altogether if atrophy is advanced. Electromyography reveals, for example, changes accompanying fibrillation, which persists as long as any denervated contractile fibres remain, and the special type of action potential noticed during the early stages of re-innervation. This sort of investigation does not give quantitative estimates of the re-innervation, and is not yet completely reliable as a guide to prognosis. Dr. Bowden stressed the value of galvanism in maintaining muscular activity, and in limiting the degree of atrophy. It must be regular, and be started as soon as possible after injury. Contractures which may develop in denervated muscle because of the connective-tissue formation can be retarded by physiotherapy, and may be prevented by daily movements throughout the whole range of the joints of the limb. Splinting of paralysed muscles should never maintain complete immobility.

WAR SURGERY

Lieut.-Colonel E. A. MACNAUGHTON, RCAMC, described the technique of early wound closure and treatment in plaster of ten compound fractures of the femur. His report dealt not so much with the immediate primary treatment—excision of the wounds, and general treatment with blood-transfusions, penicillin, and sulphonamides—but with the next stage, a week or so later. Providing that the primary treatment had been adequate, the thigh wounds in these compound fractures were completely closed, without drainage, at this stage. Closure was accompanied by accurate reduction of the fracture, and where required stainless steel wires or vitallium screws were used in its fixation, without prejudice to wound healing. This fracture fixation was, where suitable, done through the existing soft-tissue wound. Colonel MacNaughton emphasised the importance of adequate preparation of the patients for operation by rest (patients were usually tired from travelling), replacement of blood-loss, further penicillin before and after operation, and avoidance of examination of wounds in the wards before operation.—In the discussion which followed, some diffidence was expressed about the use of metallic fixation in such cases.

Lieut.-Colonel R. ZOLLINGER, MC USA, questioned the value of sulphonamide drugs inserted into wounds. This, he felt, is unnecessary if the primary excision has been adequate. Sulphonamides thus inserted do not penetrate far into crevices, where it is often important to maintain a high concentration of the drugs; this could be ensured only by adequate general administration.

AMPUTATIONS

At Queen Mary's Hospital, Roehampton, Mr. F. G. ST.CLAIR STRANGE read a paper on the *Amputation Stump, in Health and Disease*. The amputation stump must be considered a new and normal organ, on the perfection of which will depend the health and happiness of the patient. The state of this organ should be an evenly truncated cone, having the smoothness of skin and scar mobility which follows first-intention healing, and with no scarring or œdema in the subcutaneous tissues. The stump requires an internal scar, between the cut surfaces and the top surfaces of the flap; normal structure and function of the muscles inserted into the stump; rounding off of the bone end, with its covering layer of compact bone; and the special adaptation of function in the stump to control the artificial limb. To achieve all these, Mr. Strange emphasised the need for an operative technique planned with precise attention to detail at every stage. This must be a plastic as well as an orthopædic operation. The flaps should be rounded, and should contain deep fascia, in order to retain lymphatic, blood, and nerve-supply to the skin.

There must be minimal trauma of nerves. Bone and periosteum must be cut at the same level. Careful hæmostasis must be followed by artistic skin suture. A neat stump, besides being physiologically sound, gives the surgeon a justifiable sense of æsthetic achievement, and gives the patient a good psychological start to his life as an amputee. "Dog-ears," and other redundancy must be avoided, the flaps just meeting over the end of the stump. Postoperative care must avoid the development of flexion contractures. There must be minimal disturbance of dressings; elastic stump bandaging should be used from the 12th day, to shrink the stump without forming a "waist"; non-resisted exercises should be encouraged from the 12th day, whereas progressive resisted exercises do not begin until 3½ weeks after amputation. With a thorough regime stumps are ready for measuring in 4–6 weeks, and are ready for limb-wearing by the time the artificial limb is made. Throughout the consideration of re-amputation, Mr. Strange emphasised that in spite of the use of penicillin and sulphonamides surgical first principles must be followed—the operation should be approached in the same spirit as, for example, a bone graft for an old compound fracture. One must have an absolutely aseptic field, and adequate time must be left after the healing of the original sepsis before re-amputation is embarked on.

Prof. N. PRIOROV gave a résumé of the experiences with amputations in a large area under his control in Russia. Plaster was applied to the stumps to facilitate transit in cases of primary guillotine amputations in field hospitals. First dressing was never done before the 8th day. Secondary suture of long skin flaps was often done with sutures inserted through plastic buttons, which can be pulled up gradually until closure is effected. The operative techniques were essentially the same as in this country, except that the end of the bone canal is usually tamponed with muscles. Temporary bucket peg-leg prostheses are extensively used.

Mr. GEORGE PERKINS emphasised the importance of the deep fascia and its treatment in providing a mobile scar.

Colonel STOUT, NZAMC, said that in the New Zealand Army all their amputations were left open until the 4th or 5th day, and sutured then; they were expected to heal by primary intention.

Major MATHER CLEVELAND, MC USA, said that the American Army surgeons were told to carry out circular amputations at the lowest possible level. In most cases these were followed by skin traction within a plaster bucket. The soldier was then immediately evacuated to the interior, where definitive treatment was carried out.

Prof. T. P. MCMURRAY asked surgeons not to be hasty in carrying out amputations; even a bad limb of his own might be more acceptable to a man than an artificial one.

Dr. A. J. CRAFT demonstrated all the standard limbs supplied by the Ministry of Pensions.

Mr. R. D. LANGDALE KELHAM, in a paper on amputations in children, stressed the need for making stumps as long as possible, because the stumps of children do not grow as much as their normal limbs.

Colonel REX DIVELEY, MC USA, presented a cinema film, dealing with the life of a man who had two arms amputated and yet attained a high degree of independence.

Major JOHN CHARNLEY, RAMC, demonstrated an adjustable weight-bearing calliper splint, designed on the Thomas principle but suitable for mass-production in a variety of standard sizes, having a ring for ischial bearing which was adjustable within limits for different thigh circumferences, and upright irons which were adjustable for length by a screw-fitting extension. With a suitable supply of basic parts, fitting and supplying such an appliance took an hour or two, compared with the several weeks required for a made-to-measure product.

During the meeting honorary membership was conferred on Sir ALFRED WEBB-JOHNSON, FRCS, and on Mr. J. RHAIADR-JONES, chairman of the executive committee of the Central Council for the Care of Cripples.

Reviews of Books

The Sick African

A Clinical Study. MICHAEL GELFAND, MB CAPE TOWN, MRCP. (Post-Graduate Press. Pp. 357. 25*s*.)

THOUGH not a textbook of tropical medicine, this comprehensive study of African diseases, tropical and other, shows the author to be an acute observer and a sound clinician. The book is designed to help, primarily, those coming into contact with sick Africans for the first time. These at present are bound to be mostly European, since qualified Africans are as yet few. Dr. Gelfand has therefore wisely given a good deal of attention to the differing aspects of disease as they affect Europeans and Africans. These differences are not only physical and clinical, but include psychological and environmental factors. The low level of housing and hygiene, the faulty diet, the long distances to be travelled in search of medical aid, and the scanty funds available for that aid all colour the picture and are especially emphasised in the first two chapters. Dr. Gelfand makes no attempt, however, to arrange his material in scientific order, and the table of contents is somewhat haphazard. The order of the chapters is partly based on the frequency with which a disease occurs; thus the first three chapters are on malaria, bilharziasis, and ankylostomiasis, after which come the usual tropical diseases (or diseases now considered tropical), fevers, venereal disease, diseases of the heart, and of the respiratory and nervous systems, &c. Diagnosis, symptoms, and treatment are given pride of place; pathology is not dealt with in detail, and the book does not attempt to include surgical treatment. The account of the prophylaxis of preventable diseases is rather scrappy, perhaps because Dr. Gelfand thought it outside the scope of the book. Possibly the advent of DDT may make him more hopeful. Nevertheless, the book is likely to become a vade mecum to doctors in Africa, as well as to others who may have to treat sick Africans when no doctor is available.

War Surgery

Lectures by Various Authors. (British Medical Students Association. Pp. 67. 2*s*. 6*d*.)

THE British Medical Students Association invited eight well-known surgeons to address them on some aspect of war surgery, and these lectures proved so popular that it was decided to publish them. Sir James Walton on recent advances, Mr. Tudor Edwards on chest wounds, Mr. McIndoe on facial injuries, and Sir Ernest Rock Carling on burns give summarises of their subjects which will be as useful to the experienced as to the novice. Rear-Admiral Gordon-Taylor contributes an article on surgery in Russia, and Dr. J. Trueta discusses the treatment of wounds in plaster-of-paris. Major-General Max Page, on surgery in the field, had too large a subject for compression into one lecture. Colonel Elliott Cutler gives his views on first-aid in a lecture whose language is refreshingly informal and whose contents show how various snags, particularly in first-aid in American aircraft, have been overcome.

Black's Medical Dictionary

(18th ed.) J. D. COMRIE, MD EDIN., FRCPE. Editor: H. A. CLEGG, FRCP. (Black. Pp. 998. 18*s*.)

THIS popular reference book has achieved a very large circulation since its appearance in 1906, and up to his death in 1939 all revisions were carried out by the author, Dr. J. D. Comrie. It is important that a work so widely consulted by the lay public should be both accurate and up to date: Dr. Clegg has done valuable service in preparing the 18th edition, in which both these objects have been achieved.

The Public Attitude towards Mental Disease

and Urgent Reasons for Early Treatment. (2nd ed.) HORACE HILL, MRCP. (Bennett. Pp. 35. 2*s*. 6*d*.)

THERE are still many members of the public who have superstitious or distorted notions about mental disorder. Dr. Horace Hill has published a brochure which indicates briefly and simply how desirable it is that the relatives of an insane person should not put off admission to a mental institution as long as possible, but should rather obtain for the patient the benefits of early treatment.

VITAMIN DISCLOSURE—
an accomplished fact

Few reforms can claim to have been accomplished in the relatively short time that compulsory vitamin disclosure has taken to reach the statute-book. Most people are now aware that, as from January 1st, 1945, it has become illegal to claim in advertisements that a food contains certain vitamins and minerals unless the actual amounts are stated.

Credit is due to the Ministry of Food, no less than to the Medical Research Council, on this happy outcome of their united efforts to protect the public against doubtful and often unsupported vitamin claims.

The attitude of Vitamins, Ltd., proprietors of Bemax, has been both consistent and persistent. Bemax advertisements have urged that vitamin claims should be prohibited unless supported by disclosed analysis.

For years the vitamin and mineral content of Bemax has been declared on every package.

1 oz. of Bemax provides:—

Vitamin A (Carotene)	280 i.u.
Vitamin B_1	250 i.u. (0.75 mg.)
Vitamin B_2 (Riboflavin)	0.3 mg.
Nicotinic Acid	1.7 mg.
Vitamin B_6	0.45 mg.
Vitamin E	8 mg.
Manganese	4.0 mg.
Iron	2.7 mg.
Copper	0.45 mg.
Protein	30%
Available Carbohydrate	39%
Fibre	2%
Calorific Value	104

Vitamins Limited, 23, *Upper Mall*, *London*, *W.6*.

Winter PROPHYLAXIS

Recurrent winter infections, in the absence of any detectable infective focus, suggest some deficiency of protective factors in the diet.

Modern work has shown that such deficiencies are invariably multiple.

A multiple vitamin and mineral supplement will be of benefit if it provides enough of the missing protective factors. Complevite does this.

The recommended adult daily dose supplies:

Vitamin A	4,000 i.u.	Calcium	153 mg.
Vitamin B_1	200 i.u.	Iron	68 mg.
Vitamin C	400 i.u.	Iodine, Manganese, Copper	3 p.p.m.
Vitamin D	300 i.u.		

COMPLEVITE
a multiple vitamin and mineral supplement

Further particulars regarding Complevite tablets from Vitamins Ltd. (Dept. L.C.I.), 23, Upper Mall, London, W.6

'ALBUCID' IN WARFARE

The brief story of 'ALBUCID' is the war-time saga of all British Schering preparations. Once an enemy monopoly—'German-owned and made in Germany'; now—'British-owned and made in England.'

Yet, at the outbreak of war 'ALBUCID' was no more than a chemical blue-print—a sulphonamide promise on paper.

To day, 'ALBUCID' preparations are playing a big part in every Allied theatre of the war. On land and sea and in the air. In the mines On the home and fighting fronts.

Not yet—for security reasons—can the full story be told. When the time comes it will be one of achievement for British science and manufacture; of problems solved, difficulties overcome and supplies maintained to the Forces whatever the effort involved.

To-day 'ALBUCID' and 'ALBUCID' SOLUBLE preparations, with nearly four years' clinical experience behind them, are also freely available for all civil requirements in the following preparations:

'ALBUCID'
STERILE POWDER

'ALBUCID' SOLUBLE
EYE DROPS

'ALBUCID'
ORAL TABLETS

'ALBUCID' SOLUBLE
EYE OINTMENT

'ALBUCID' SOLUBLE
FIRST AID DRESSING

'ALBUCID' SOLUBLE
EYE LOTION TABLETS

'ALBUCID' SOLUBLE
BURN AND WOUND DRESSING

'ALBUCID' SOLUBLE
NASO-PHARYNGEAL SOLUTION

'ALBUCID' SOLUBLE
INTRAVENOUS INJECTION

'ALBUCID' SOLUBLE
DENTAL CERATE

'ALBUCID' SOLUBLE
pH-ADJUSTED SUBSTANCE

Clinical samples and fully descriptive literature gladly sent on request to interested medical practitioners.

'Albucid' is the registered name which distinguishes sulphacetamide of British Schering manufacture.

BRITISH SCHERING LIMITED

185 190 HIGH HOLBORN LONDON W.C.1

BS

THE LANCET

LONDON: SATURDAY, JANUARY 6, 1945

Who should Feed the Sick?

FOR those engaged in hospital catering the welfare of the patient is seldom the sole criterion of success. Thus in many municipal hospitals food is entirely in the hands of the steward and his clerks, men so well trained to respect public money that they often see economy as a measure of efficiency. In voluntary hospitals responsibility for the patient's diet is usually borne by the secretary or the matron, both of whom must keep in mind other considerations such as cost, the staff of the kitchen, and the work entailed for nurses. Even the best intentions can be dissipated by such division of loyalty, and, in addition, the persons concerned usually lack the special knowledge needed for their task. Consequently, though a few hospitals can fairly take a pride in the meals they provide, they are only exceptions to a thoroughly bad rule.

That this situation has arisen is one of the anomalies of medicine. The earliest hospitals looked to the friends of the patient to bring him food, or else supplied his bare wants out of charity. When convenience made the feeding of the sick a part of hospital care it was still undertaken as a charitable duty, not as a part of treatment. Doctors as a whole never seem to have felt responsible for it. But we have no right to this philosophic detachment, for every day the good results of medicine and surgery are nullified or delayed by failure to apply the most elementary principles of invalid feeding. Those who keep their eyes and ears open will not lack examples—the flatulent "abdominal" who is expected to cope with beans and under-boiled potatoes; the young child given strong tea instead of his accustomed milk; the patient awaiting admission to a sanatorium whose food is so scanty and unattractive that he steadily loses weight; the men at a spinal centre, many with bedsores, whose condition deteriorates on a small, monotonous, and distasteful diet. A large proportion of patients, urged to speak frankly, will tell a story of this kind from their own experience of hospital—people whose standard of adequacy is by no means high. Moreover, studies of diet in hospitals show that, even in some of the most famous, the patient cannot expect to get the full sugar and fat rations to which we are all entitled. The hospital, faced with the task of getting sick people back to work quickly, is often less careful for their proper nourishment than was Lord WOOLTON, tightening their belts for war. Moreover, improper social distinctions have crept into hospital feeding. Thus officers may have good food at the expense of other ranks in the same hospital, who do not always get enough, and "surplus" rations from the public wards may be used to make sweets and puddings for the private patients' supper. This sort of thing cannot possibly be justified. Rations leave no margin for generosity to the well-to-do.

That food should be unattractive is bad enough: that it should be insufficient is a failure which as doctors we should never have countenanced. From these defects it follows that in many cases the diet, instead of supporting treatment, is in active conflict with it; and that the patient only begins to derive full benefit from the care of his doctors after he has gone home. True the science of dietetics is still young; but HIPPOCRATES and GALEN long ago knew well enough what weight to give to regimen. In letting the feeding of patients develop along such casual lines we have been negligent and irresponsible; and however difficult and inconvenient it may be to change existing customs we must see that this is done. It is a task for the heads of the profession: registrars, junior medical officers, and newly appointed dietitians have not the power or influence to correct the errors and inadequacies which they witness daily. Often the dietitian who tries to enforce her recommendations finds herself directly up against nursing or administrative interests. It is for those whose voices carry weight on the governing body of the hospital to insist on reorientation.

A feasible plan of reform was put forward more than a year ago by King Edward's Hospital Fund.[1] This suggested that every hospital should have a permanent food-service committee representative enough to clear the various administrative and professional hurdles—the financial responsibilities of the catering officer or purchaser, the choice and quantity of foods recommended by doctors and dietitians, and the staffing puzzles of the matron. The attitude of the finance department has important repercussions on food. Some of the apparent economies of today—such as the inexpensive cook—may be false economies financially as well as medically. Thus the Fund records that in one large hospital where the wages of the entire kitchen staff amounted to £1000 a year, £20,000 a year was spent on food until a more experienced staff was engaged, at twice the wage; then—thanks to expert buying, checking, costing, and cooking—the total expenses fell by £6000, while the diet improved. The type of kitchen staff who are willing to work for low wages are not as a rule those who have an intelligent interest in diet; and monotony, bad cooking, and a tendency to do everything the easiest way characterise the stupid cook, whether she works in the hospital kitchen or in her own home. Buying, like cooking, is a task for an expert. Matrons and housekeeping sisters have seldom had specific training in it, and in any case are never given financial control. Secretaries and stewards may have experience of its financial side, but not of its dietetic implications.

It is not yet possible for every hospital to appoint a qualified dietitian with experience of catering, and give her a free hand; for there are only 271 dietitians in the country. Dietetic diploma courses are offered by four bodies—King's College of Household and Social Science, the Royal College of Nursing, Edinburgh Royal Infirmary, and the Glasgow and West of Scotland College of Domestic Science—all of which require students to take a course lasting a year or eighteen months, including six months' practical training in the dietetic department of a recognised hospital. This practical work is largely in the diet kitchen and wards, for first-hand experience of

1. Memorandum on Hospital Diet, 1943. 6*d*.; and see *Lancet*, 1943, ii, 673.

large-scale catering is not at present considered essential for the diploma; so the British Dietetic Association suggest that in future new diplomates should make a point of gaining such experience before taking appointments. But reforms need not wait for the training centres to turn out enough dietitians to go round. Mrs. BEETON took no degree in housekeeping, and FLORENCE NIGHTINGALE was not an SRN. Probably in every hospital there are one or two people with the character and initiative to change the picture if they once became infused with the crusading spirit, if they knew a little more, and if they could come by the necessary power. That it would take very little to rouse them was evident from the attendance at a refresher course in catering arranged by King Edward's Hospital Fund in May of this year. Invitations were sent to all the voluntary hospitals in the London area, and 65 of these sent some 150 representatives, including secretaries, matrons, stewards, assistant matrons, dietitians, catering officers, housekeeping sisters, and cooks. They were ready and anxious to learn.

What is needed then? Modern equipment, certainly; and more cooks and dietitians as soon as we can make them: but above all, champions with authority. In every hospital some or all of the medical staff should be backing this essential reform with their might. Good diet is as necessary to recovery of health as good nursing, surgery, or medicine, and it is folly to pretend that it is beyond the power of our profession to change this reproach. It has been created through our indifference and idleness and must be removed by a bit of hard work.

Arterial Advances

IN 1919 Sir GEORGE MAKINS, FRCS, published his red-faced book which tells the story of gunshot injuries of the blood-vessels in World War I. A more thorough study could not be imagined, and the opinions there expressed have held fast, for they were based on close factual observation. Subsequent writers on vascular surgery have leaned heavily on MAKINS for their inspiration, though the years between the two wars have seen great advances. Particularly important have been the clinical studies on the behaviour of peripheral vessels under normal and abnormal conditions. A new era of "physiological" vascular surgery began with the development of sympathectomy, and the early optimism has given place to firmer knowledge of its indications and limitations. The isolation of heparin opened up a new field by bringing one hazard of vascular work—thrombosis—under control. Then came the sulphonamides and with them a real hope of controlling that other hazard—sepsis. War provided the opportunity to test these advances, and the experiences of five years are reviewed and applied in a new memo on arterial injuries, produced by a Medical Research Council subcommittee under the chairmanship of Sir THOMAS LEWIS.[1] Marked "for beginners," it has nevertheless been packed with much sound advice that should be absorbed by all.

Most surgical textbooks do not give us the simple clinical details of what happens to a limb when its blood-supply is cut off. This is lucidly described in the memo, which sets out the principles of treating the partially or completely divided vessel and the subsequent care of the ischæmic limb. Special vascular centres have now been established in Britain, and it is important to transfer suitable cases to these centres early, so that full physiological observations can be undertaken. The memo is not concerned with the later complications of vessel injuries, such as the arterial or arteriovenous aneurysm. These partial lesions have not been common in this war, for the destructive force of the modern missile tears and disrupts the surrounding tissues and thus prevents the imbrication of overlying layers necessary for the hæmatoma formation which is an essential preliminary to the development of an aneurysm. Moreover, there is often gross destruction of the collaterals as they run in the muscle and bone; and the extent of this damage, rather than reflex vascular spasm, is now regarded as the main factor deciding the onset of gangrene. The memo points out that a femoral artery injury, if associated with damage to the femur, is almost invariably followed by gangrene and is an indication for primary amputation. Popliteal vessel injuries too have acquired a sinister reputation in this war. Ligature, however, has not always been followed by gangrene. Thus if a small splinter divides the vessel the adjacent tissue injury is usually slight and ligature may then be successful. But where the missile is of fair size the local collaterals are certainly destroyed and gangrene usually follows. LE GROS CLARK [2] has recently demonstrated experimentally that the missile may also throw the arterial collaterals along its track into spasm. The memo advises that the vessels should be ligatured as close as possible to the site of division, excising of course the contused ends; more remote ligature deprives the limb of important muscular collateral branches. HOLMAN [3] disagrees, declaring that the large artery—especially the brachial or femoral—should be ligated between the main collateral branches and the intervening segment excised. He maintains, on experimental grounds, that part of the force of the stream is otherwise wasted in the blind end and the pressure in the collateral vessels will be found slightly reduced. Such slight falls in pressure are not, however, in themselves significant, for experimentally the pressure in the distal segment of the divided vessel may fall to a third of the systolic pressure (from 110 to 40 mm. Hg) and yet there be no interference with the recovery of the distal limb circulation.[4] That vessels should not be ligatured in continuity has been stressed time and again. The strangling effect of such ligature, and the "battering" of a fixed point in the stretched vessel, are likely to lead to necrosis and sloughing. It is difficult to convince the beginner of this, for he will believe that a terminal ligature runs the risk of being kicked off by the vessel's pulsation. As HOLMAN [5] has stressed, when

1. Arterial Injuries: Early Diagnosis and Treatment. Medical Research Council War Memo No. 13. HMSO. Pp. 24. 4d. The Vascular Injuries Subcommittee of the MRC War Wound Committee consists of Sir Thomas Lewis, FRS (chairman), Air-Commodore Stanford Cade, FRCS, Sir Ernest Rock Carling, FRCS, Mr. S. M. Cohen, FRCS, Prof. J. H. Gaddum, SC D, Surgeon Rear-Admiral G. Gordon-Taylor, FRCS, Major D. Ll. Griffiths, FRCS, Prof. J. R. Learmonth, FRCSE, Mr. B. C. Maybury, FRCS, Prof. J. Paterson Ross, FRCS, Dr. D. S. Russell, Lieut.-Colonel H. P. Simmons, FRCS, Prof. E. D. Telford, FRCS, and Dr. F. H. K. Green (secretary).

2. Le Gros Clark, W. E. BOA meeting Dec. 15, 1944, reported in this issue.

3. Holman, E. *Surg. Gynec. Obstet.* 1944, **78**, 275.

4. Charnley, J. *Brit. med. J.* 1944, i, 716.

5. Holman, E. *Surg. Gynec. Obstet.* 1942, **75**, 183.

the vessel is divided there results a gap between the ends, and the force within the vessel is spent in stretching the relaxed elastic wall, so little strain falls on the actual ligature site. There is some difference of opinion as to the ligature material to be used, and the memo make no particular recommendation. MONT REID [6] brought forward good evidence that fine silk, doubled or more, was to be preferred, but with careful primary surgery catgut has on the whole served well. Vessels have, of course, their crucial points of ligature, and at times, especially in the "cold" aneurysm operation, it may be possible to select the ligature site. DE TAKATS [7] has drawn attention—and so does the memo—to some of the more suitable points for subclavian, axillary, and popliteal ligature.

Ligation puts the onus on the collateral circulation, which expands and repairs itself more rapidly than we used to imagine. To maintain the ischæmic tissues alive during this stage of repair is therefore the fundamental in treatment. The memo sets out clearly the management of such a limb. First and most important is attention to the patient's general condition; the limb circulation appears to be rationed until the general condition improves. The memo recommends blood rather than plasma for transfusion, and plenty of it. The need to damp down the metabolism of the ischæmic limb by resting it and keeping it cool is now well apprehended. But there is less agreement on the measures for "forcing" the collateral circulation. The value of sympathetic block is debatable; although as a preliminary to operation for the arterial aneurysm, where the collateral circulation is already established, it certainly has a place.[8] Ligation of the main vein at the same time as the artery is recommended, without enthusiasm, in the memo. There has been a trend against it, and surgeons in the Middle East and the *Field Surgery Pocket Book* regard the evidence in its favour as "not convincing." WILSON in 1933 [9] also concluded that the "supposed benefits of venous ligation have not withstood experimental trial." But MAKINS's vast experience cannot be ignored, and especially on the other side of the Atlantic such vein ligature is favoured. REICHERT'S [10] ingenious animal experiments showed that if all the tissues of a limb are divided except the bone, artery, vein, and nerve, and then sutured, by the seventh day the artery and vein can both be ligated without precipitating gangrene, whereas if only the artery is ligated gangrene will follow unless the ligation is delayed until the fourteenth day. Such collateral vessel damage closely mimics the conditions in gunshot injuries.

In war surgery arterial ligature obviously has its limitations, for to tie the vessel when there is extensive collateral damage is to court gangrene. Re-establishment of the main arterial stream is our obvious ideal, but end-to-end suture, as the memo points out, is rarely feasible, since excision of the devitalised ends leaves an enormous gap. Besides, such patients have usually lost much blood, and the heat of battle is scarcely the time for delicate vascular work. Other methods are being tried, some as yet in the experimental stage. The memo refers to the work of BLAKEMORE, LORD, and STEFKO,[11] who devised 'Vitallium' cannulæ through which they threaded segments of vein taken either locally or from the saphenous vein. The vein is turned back like a cuff over the ends of the cannula, which are then inserted into the ends of the divided vessel. Blood thus circulates through a vein-graft without being in contact with any metal. Experimentally this method has been particularly successful even without heparin, and it has been carried out in the presence of deliberate mild sepsis.[12] In dogs it was possible to amputate the limb, refrigerate it for 24 hours, and then restore the circulation again by this method. It has been successfully used on a child with a divided brachial artery. The cannulæ are now issued to the American Army, and we understand they have had one successful case already. Those who have tried them declare, however, that the cannulæ are difficult to manage, and the technique is not as easy as it appears. In animals SPIEGEL, FRIEDLANDER, and SILBERT [13] have used the distal end of the divided vessel as a means of autotransfusion, and thus maintained the life of the limb until the collateral circulation was restored. There are several problems to be answered before this method can be applied to man. We do not yet know how much blood such a limb should receive, though we know that it must be only a fraction of the normal or anasarca soon develops. The extracorporeal oxygenation of venous blood also deserves further study, for it may enable us to maintain human limb preparations and thus pave the way for controlled human vascular experiments. The memo recommends the temporary use in selected cases of the Tuffier cannula with heparinisation. This will tide the patient over while his collateral circulation is developing, and will do much to prevent the onset of gas-gangrene in the distal ischæmic limb. Such heparinisation is of course only possible if there are no other gross injuries. With the control of wound infection now possible an entirely new field of vascular work has been opened up—the delayed repair of the vessel. In 1940, after animal experiment, MURRAY and JONES [14] advocated the use of glass cannulæ (and air-raid experience has shown how inert glass is within tissues) as a temporary measure to bridge the vessel gap. They suggested that the patient could then be heparinised and transferred to a better equipped hospital for vessel repair. MURRAY,[15] in his Hunterian lecture in 1939, showed that experimentally heparinisation enabled a vein graft to be used to bridge a gap in an artery, and he recorded successful vein-grafting in man. This operation has been carried out in the Canadian Army on two cases, temporary cannulæ being replaced by venous grafts on the third day. It is particularly pleasing to note that the MRC have taken on themselves the responsibility of collecting and evaluating such advances for the multitude of surgeons.

6. Reid, M. R. *Surg. Gynec. Obstet.* 1934, **58**, 237.
7. De Takats, G. *War Med.* 1943, **3**, 291.
8. *Lancet* editorial, 1944, ii, 443; Learmonth, J. R., Richards R. L. *Ibid*, 1942, i, 383.
9. Wilson, W. C. *Brit. J. Surg.* 1933, **20**, 393.
10. Reichert, F. L. *Bull. Johns Hopk. Hosp.* 1931, **49**, 86.
11. Blakemore, A. H., Lord, J. W., Stefko, P. L. *Surgery*, 1942, **12**, 488.
12. Cabled information (not published).
13. Spiegel, R. Friedlander, M., Silbert, S. *Surg. Gynec. Obstet.* 1943, **77**, 162.
14. Murray, G., Jones, J. M. *Brit. med. J.* 1940, ii, 6.
15. Murray, G. D. W. *Brit. J. Surg.* 1940, **27**, 567.

NHS or NHI+?

SOME two months ago a group of Conservative MP's headed by Sir ARNOLD GRIDLEY suggested in the *Times* that immediate steps towards a National Health Service should be limited to the organisation and distribution of hospital and consultant services, with extension of medical benefit to the dependants of those people already covered by National Health Insurance. This view is of course shared by many doctors, as was clearly shown in subsequent correspondence as well as at the Panel Conference and the annual representative meeting of the British Medical Association. Many who have long demanded these two reforms, and have had little encouragement from Government quarters, are understandably suspicious now that the Government, sweeping aside their suggestions, propose much greater changes. They would like to see their first two steps taken first, and only after that advance is made and consolidated would they be willing to contemplate more radical alterations. Indeed, Sir FREDERICK KAY MENZIES, from his great experience of medical organisation, argues that progress by stages is necessary because it will take at least 20 years to evolve an efficient service for the entire population—an interesting commentary on the care the public now receive.

The opposing view has been expressed by the *Times* itself and by the Tory Reform Group of MP's, writing on Dec. 22. Briefly this view is that the limited reforms proposed would only be of interim value: as they could not provide a health service capable of fulfilling the demands of the social security plan, they would soon have to be superseded by a more comprehensive scheme; and the difficulties of introducing them would be so little less than the difficulties of the wider scheme that it would be wasteful of time and energy for the Government to do otherwise than plan and negotiate for a comprehensive and universal medical service from the first. The medical profession as a whole has not yet perhaps sufficiently appreciated that a large extension of medical services is necessary to the working of the kind of social security legislation now in prospect. The Tory Reform Group make this point emphatically when they say:

> "We cannot contemplate the payment of benefits on a substantial scale to all who have lost their earning power through sickness or industrial accident or disease unless the claim is backed by a doctor's certificate and unless medical attention, including whatever is necessary in the way of specialist or hospital treatment and rehabilitation, is provided in order to restore earning power at the earliest possible moment. To limit these advantages to the present beneficiaries of National Health Insurance and their dependants neither simplifies nor improves the white-paper proposals."

Even extension of this system to provide a specialist and hospital service would involve wide administrative alterations. As Mr. HUGH LINSTEAD remarked on Tuesday, extension of the panel would raise the same problems as the larger scheme, "with the disadvantage that you are committed to use old machinery."

However there need be no fear that the experience of insurance practice over the last thirty years will be overlooked when negotiations begin. The BMA have chosen among their 16 representatives on the Negotiating Body no less than 14 members with long practical experience of general and insurance practice: in fact, 8 of them belong to the present Insurance Acts Committee, and of these Dr. H. G. DAIN and Dr. E. A. GREGG probably have greater detailed knowledge of the history and practice of NHI than any other two men in the profession. If the guidance of our representatives is heeded it is likely that the new service, whatever its final framework, will retain all those attributes of the panel system that have been found fairest and best both for the patient and doctor. The Tory Reform Group urge their Conservative colleagues not to embarrass the Minister of Health by making restrictive proposals, but allow him "a fair field in which to negotiate with the appointed representatives of the profession." The time has come when the profession, with confidence in its negotiators, should exercise similar restraint, reserving critical suggestions until more is known of the ways in which the Government are willing, or can be persuaded, to modify the white-paper proposals.

Annotations

UNRRA AND NORTH-WEST EUROPE

"THE hungry sheep" of the liberated countries "look up and are not fed," and many people here are beginning to ask the reason why. Before the Allies invaded Europe the Germans were in the habit of telling the occupied countries that though they might dislike conditions under the Reich, they would still more dislike being liberated. In the strictly material sense, thanks to the disruption of modern war, this may have proved true.

Since UNRRA is ostensibly the relief organ of the United Nations, it is being widely blamed for the present state of affairs. Most of the critics, however, do not understand the political and administrative limitations on UNRRA's power to act, or the practical difficulties involved—above all in transport. As a correspondent points out on p. 28, before UNRRA can provide relief in any country, two conditions must be fulfilled: it must be invited to operate by the government of the area, and (during the so-called military period of relief) it must also be invited by the military authorities. Today, if the governments of, say, France and Belgium ask UNRRA for supplies, all that UNRRA can do is to refer them to the Civil Affairs division of Supreme Headquarters Allied Expeditionary Force (SHAEF). Responsibility for the present situation thus rests squarely on the military, just as it did in Madagascar, Syria, North Africa, and Italy, before UNRRA was created. Faced with criticism, the military answer is that the critics are evidently unaware of the shortages of shipping, of ports and port installations, and above all of inland transport in the form of usable roads, railways, locomotives, rolling stock, and lorries. These shortages make it impossible to supply both the armies and the civil populations. Even stores required by the Forces, it is said, are held up at the arrival ports through lack of transport—of which a modern army never feels it has enough, still less a surplus.

As regards supplies in large quantities, such arguments are no doubt valid. It probably is impossible at present to raise, for example, the calories of Belgian heavy workers substantially above the 1600 they now get daily, or to import the coal and raw materials for want of which industry is standing idle. But such considerations do not apply to the small quantities of medical supplies urgently needed in certain areas. If it is true that people are dying in one area for lack of an amount of insulin which could be carried in a suitcase; if in other areas there are towns without a single bandage; if the essential medical supply needs of Belgium could be satisfied by one transport plane a week, or one trawler a

month, then such small amounts of transport should be made available, either to Civil Affairs or to UNRRA. We suspect that such matters are overlooked or postponed just because they are so small, and that a man thinking in terms of shells for an army is not likely to see the relative importance of a package of insulin. Moreover, the objectives of Civil Affairs and UNRRA are not identical. The primary aim of Civil Affairs is to prevent civilian problems from hampering the armies: the primary aim of UNRRA is to provide relief. Now that the armies are handing over to the French Government complete control of the *zone intérieure* of France, it should be possible for UNRRA to begin its own work of relief even on a small scale. But it must be given the small but essential transport facilities required.

PREGNANCY TESTS

THERE are now three tests for pregnancy which depend on the demonstration of an increased quantity of chorionic gonadotrophin in the urine. It is hard to know what names to use for them. Reference to the animal employed may lead to confusion—the "mouse" test sounds all right, but the "rabbit" test is often misheard as the "rapid" test, and as for the third, the animal is strictly speaking neither frog nor toad, and "xenopus" sounds rather pompous. The use of eponyms is the commoner practice, though the names Aschheim, Friedman, and Hogben are frequently misspelt.

The Aschheim-Zondek test has already proved its reliability, and for many years Professor Crew was able to report a very low percentage of error with it from the Edinburgh Pregnancy Diagnosis Station. Almost every step in the procedure, from the preliminary weighing of the mice to the diurnal injections, the gassing, and the dissection and mounting of the ovaries, can be left to the trained technician, and only the inspection and reading of the ovaries need be undertaken by the director of the station. A big colony of mice, or a reliable supplier, is essential. By using 5 mice for each test, the occasional refractory animal is virtually eliminated, and false positives should be rare provided the weight, and therefore the age, of the mice has been carefully checked. The great disadvantage of this test is that it takes 5 days to perform.

The Friedman test, which is now almost as well known, is perhaps more suited to the smaller laboratory than to the pregnancy diagnosis station. Small numbers of doe rabbits need to be kept in stock and each strictly segregated not only from bucks but from other does. The intravenous injection of the untreated, or simply filtered, urine demands some technical skill which is acquired by practice. Results may be read in 48 hours. The test animal can be eliminated as a possible source of error. A preliminary laparotomy will allow inspection of the ovaries before the test is begun; 48 hours after injection of the urine for diagnosis another laparotomy may reveal the characteristic corpora lutea and hæmorrhagica of a positive test, or it may reveal no change in the appearance of the ovaries. Injection of a known urine of pregnancy will now make sure that the individual rabbit will respond to chorionic gonadotrophin, and that the appearances found after the second laparotomy were those of a true negative test. This procedure, while bestowing on the test a high degree of accuracy, renders it unsuitable for use on a large scale.

The Hogben test has the great advantage of speed, and only those familiar with pregnancy diagnosis tests will appreciate how important that is. A woman, content to have missed her period by many days, will suddenly decide that she must know at once whether she is pregnant or not. Xenopus will give her the answer within a day. For some years difficulty was experienced in this country with the Hogben test because it was impossible to breed the animals. This difficulty has now been overcome. There is nevertheless one serious disadvantage to the test—if untreated urine or alcohol-precipitated extract is injected, it kills 15% or more of the animals. Preparation of the urine to make it less lethal is an elaborate process depending on the adsorption of the gonadotrophin on kaolin, but in a pregnancy diagnosis station this can of course be carried out on a a large scale without seriously inconveniencing the organisation. It is advisable to kill animals not showing extrusion of ova overnight, for in some cases ova are found in the oviducts on post-mortem examination and an apparently negative test may prove to be positive.

From each of these three standard tests an accuracy of about 98·5% may be obtained provided a detailed technique is developed in the hands of experienced workers. The Friedman test is suited to the small laboratory with a qualified research-worker who will conduct most of the steps of the tests himself. The Aschheim-Zondek and Hogben tests are more suited to the pregnancy diagnosis station, where such manipulations as multiple injections of animals and chemical preparation of the urine can be placed in the hands of trained technicians, the reading of results being alone left to a qualified director. Under such conditions minor variations in technique assume less importance.

NUCLEAR TISSUE

THE basis of practically all histology is the use of stains which distinguish the nucleus from the cytoplasm. By this device the minute structure of the whole body has been made out, and the sequence of changes which the nucleus undergoes in cell division has been observed. These are matters of common knowledge to most of us, however long ago we may have taken our final MB, but within the last 25 years the irrepressible biochemists have greatly disturbed this quiet little medical backwater. Their achievements, recently reviewed by Davidson and Waymouth,[1] now constitute an important development in medical science.

The nucleotides are the basis of all nuclear structure and there are, broadly speaking, two kinds. Both contain a purine or pyrimidine base, a carbohydrate and a phosphoric acid group, but they differ in that in one the carbohydrate is desoxyribose and in the other ribose. This apparently minor structural change confers considerable functional differences on the nucleotides. Those containing desoxyribose condense into molecules with molecular weights of upwards of 1,000,000, and are characteristically found in the nuclei of cells. The others condense less readily and are found mostly in the nucleolus, the cytoplasm, in cells without visible nuclei, and in viruses. Nucleotides containing ribose and adenine act as co-enzymes in cell respiration, and it is interesting to recall that two of the B vitamins—riboflavin and nicotinic acid—also enter into the composition of these enzyme systems.

Ribose nucleotides are broken down by an enzyme which has now been isolated and crystallised. This enzyme is heat-stable—i.e., it is not destroyed at 100° C—and it has been prepared and utilised to differentiate the two kinds of nuclear material in cells. Within the last 8 years a method of "staining" nuclear material has been introduced by Caspersson of Stockholm. The purine and pyrimidine bases absorb ultraviolet light much more intensely than any other cell constituents, and by using this light and photographing the cells through quartz lenses the distribution of nuclear material and alterations in its concentration can be followed. Both these techniques have contributed greatly to our recent knowledge, but there are other contributors, one of them being the ultracentrifuge. By this instrument macromolecular complexes can be

1. Davidson, J. N., Waymouth, C. *Nutr. Abstr. Rev.* 1944, **14**, 1.

isolated. The nucleic acids form just such complexes with other cell constituents, and proteins and phospholipins have been identified in them. Some of the infective agents, such as the virus of the Rous sarcoma, have been shown to contain these phospholipin complexes, but they are not confined to such material and were first isolated from embryonic tissue. Methods of separating the nuclei from the cytoplasm by mechanical means have also been devised, and these enable the nuclei to be subjected to analysis, not only for proteins and nucleic acids, but also for minerals.[2] The structure of the nucleoproteins is analogous to that of some of the oxidising enzymes, and it is tempting to picture them acting in some such capacity in the cell. They are, however, characteristically associated with self-reproducing systems or agents such as genes and viruses, and it is in conferring this property upon a tissue that they appear to exert their major rôle. It has been suggested that the ribonucleic acids enable the cytoplasm to grow and reproduce itself.

One of the problems still to be solved is the metabolic relationship of the ribo- to the desoxyribo-nucleic acids. Mitchell, working at Cambridge, believes that ribonucleotides accumulate in the plasma of rapidly growing cells, and that these are then changed into desoxyribonucleic acid and deposited in the nuclei, which reproduce themselves at cell division. This is an interesting suggestion, but the conversion involves the reduction of the ribose and the methylation of a pyrimidine base. Neither of these reactions has been shown to occur in vivo, but both are inherently possible. This must await further investigation, but meanwhile knowledge of fundamentals is rapidly accumulating, and with any luck some of it will be of direct value to therapeutics.

BRACHIAL NEURITIS OR HERNIATED DISC?

UNTIL about ten years ago it was generally believed that sciatica was due to sciatic neuritis or radiculitis, a form of interstitial neuritis almost equally familiar in the upper limb as brachial neuritis. Now most experts agree that sciatica is usually caused by a herniated intervertebral disc, and it is not surprising that this discovery should have aroused fresh interest in brachial neuritis. Is that long-accepted diagnosis based upon an equally insecure pathology? On another page Major Elliott and Major Kremer report 8 cases of brachial pain which they attribute to herniation of a cervical intervertebral disc. They describe a fairly clear-cut clinical picture which hitherto would probably have been labelled brachial neuritis. But it appears to be more difficult to establish the presence of a herniated intervertebral disc in the cervical than in the lumbar region. In Elliott and Kremer's cases the composition of the cerebrospinal fluid was normal and Queckenstedt's test yielded no evidence of spinal block. The X-ray changes described appear for the most part to be those of spinal spondylitis, which may or may not be associated with a herniated disc, or may even produce similar symptoms. Myelography with 'Pantopaque,' when this is generally available, may make the diagnosis more certain, as in the 3 cases of this series in which it was used. Elliott and Kremer's work will help towards the recognition of one cause of brachialgia and so indirectly clarify the diagnosis of other causes.

Experience with herniated lumbar discs has shown that it takes a considerable time to assess the results of various methods of treatment and arrive at a suitable routine. Elliott and Kremer are wisely conservative. Immobilisation, either by rest or by a plaster jacket, has proved its worth in the treatment of lumbar herniations, and the same principle seems applicable to the far more mobile neck. Paradoxically, manipulation may also be effective. While theoretically this procedure involves a risk of producing compression of the cervical spinal cord, the risk must be very slight, for many patients with "brachial neuritis" have had their necks manipulated without disaster and sometimes with benefit. The indications for surgery have yet to be determined: Elliott and Kremer did not think it necessary for many of their patients, and we must remember that most patients recovered from sciatica and brachial neuritis before a surgical cause was suspected for either, and that the mortality-rate of both is lower than that of laminectomy for herniated disc.

2. Williamson, M. B., Gulick, A. *J. cell. comp. Physiol.* 1942, **20**, 116.

STRESS FRACTURES OF THE FIRST RIB

IN examining 55,451 routine chest radiograms in Royal Naval personnel, Alderson[1] has discovered an unexpected anomaly of the first rib in 35 cases. The site of the lesion was constantly just proximal to the scalene tubercle and the appearance varied from an irregular break, transverse or oblique, partial or complete, to a fusiform swelling of callus or of solid bone. All the subjects were males, no cases being found among the 3433 women examined, and the incidence was highest in the 15–20 age-group; 30 of the 35 were men under 25. Only 5 had significant clinical features or history—2 complained of sudden pain in the shoulder after physical training, 2 recalled local trauma in previous years, and 1 had been carrying heavy weights on that shoulder just before enlistment. In 2 cases serial observation of the repair process showed the early break and later development of callus and bone, with regression of the lesion; and in one a temporary opacity of the lung apex medial to the fracture was originally regarded as tuberculous.

Alderson regards the lesion as a stress fracture essentially similar to those reviewed by Hartley[2] in the metatarsals, calcaneus, tibia, fibula, femur, pubis, and vertebræ; but while these are due to the effects of body-weight, the present lesion is more analogous to fractures of the humerus from chronic overuse. The anatomical facts support this view. The scalenus anterior and medius are inserted into the rib on each side of the subclavian groove, and if these muscles suddenly contract the subclavian artery and lower trunk of the plexus act as a restraining strap holding down the intervening portion of rib at the point where fracture occurs. In this mechanism the first digitation of the serratus anterior and the subclavius may play some part. While fractures of ribs by muscular violence are not rare, the first rib is only uncommonly involved. But this lesion seems likely to be a gradual yielding of march fracture type—certainly not a congenital anomaly, for the line of fusion of primary and secondary ossification centres is well posterior. The frequency in youth and the fact that most of the cases were in men straight from strenuous physical training also fit with an origin in muscular violence.

THE COMPLETE BLOOD SUBSTITUTE

THE discovery in Sweden has been announced of an "artificial blood plasma, capable of use by injection in the same way as real blood transfusion."[3] So far, no precise information has reached this country concerning this contribution to the transfusion problem. No more is known than the broad announcement that the substitute is a derivative of "sugar," named "dextran," which can be produced in unlimited quantities in powder form, while the reconstituted fluid can be sterilised by boiling. These features are of course necessary functions of the complete blood substitute, but it will be clear, even from the scanty facts available, that one or more of other properties, equally fundamental, are likely to be missing. The ideal blood substitute must have oxygen-

1. Alderson, B. R. *Brit. J. Radiol.* 1944, **17**, 322.
2. Hartley, J. B. *Ibid.* 1943, **16**, 255, 348.
3. *Times*, Dec. 8, 1944.

carrying power, must have a molecule of size sufficient to be retained in the circulation, and should eventually be either katabolised naturally or excreted without detriment. Without oxygen-carrying power, no more than restoration of blood-volume can be accomplished. For this purpose many substances have been successfully used, including pectin, isinglass, gelatin, human albumen, human serum, and (most popular of all) human plasma. It remains to be seen whether dextran has properties equal to natural human plasma.

AMERICAN VIEWS ON CHEST INJURIES

THE views formed by our own chest surgeons in the Middle East and Mediterranean theatres of war [1] were mostly upheld at the July meeting of the American Association of Thoracic Surgeons, now reported. Carter and De Bakey [2] analysed the chest injuries of other wars and showed that out of the total number of men hit on the battlefield the chest was implicated in 25–35%. Most of these cases die immediately because of the severity of their injuries or involvement of vital structures. In the present war, among those who survive to feature as "wounded," chest injuries constitute just over 8% of the total wounds. The present war has seen a real improvement in end-results, thanks to the more general provision of surgery of high standard. In spite of Churchill's [3] comment that the most important achievement of chest surgery in this war is the change of focus from the pleural space to the lung, hæmothorax remains the dominant problem. United States opinion seems to fall into line with British in advocating early and complete evacuation of the blood. This implies needling within the first 24 hours and again almost daily until the pleura is dry. Air-replacement, though facilitating aspiration, has serious disadvantages and should not be countenanced as a routine. Efficient aspiration, apart from relieving any physiological disability within the thorax, such as tension, is an excellent prophylactic against infection, and hastens restoration of pulmonary function. If infection does occur the cardinal principles governing the treatment of empyema must not be overlooked, lest a potentially normal lung ends as a permanently contracted mass against the mediastinum, under a huge chronically infected pleural cavity. The responsibility for sound treatment in the early stages is a heavy one, and the necessity of excluding air from the pleural cavity, both during aspiration and after early operation, is not always realised. In penetrating wounds the chances of air and infection reaching the pleural cavity through a tear or slough in the actual lung substance are appreciable.

The question of conservative or radical surgery in the early treatment of pulmonary injuries seems to have been settled in favour of a fairly conservative policy, once the claims of physiological emergencies and resuscitation have been met. Extensive formal thoracotomies are rarely called for in the early stages unless some definite indication, such as an abdominothoracic injury, is present. But there is a place for modified exploration as an extension of wound revision. Obvious foreign bodies, rib fragments, and blood-clot can be removed, bleeding points secured, and such structures as the diaphragm examined for integrity. Later on, formal operations are mainly concerned with removal of foreign bodies [4] and clot. In addition, when the lung is bound down under a chronic hæmothorax cavity, there is a possibility that the encasing fibrous layer can be removed comparatively simply and re-expansion of the lung facilitated (decortication). The Americans stress the value of intercostal nerve-block with procaine in the early treatment of painful chest injuries, and seem to make more use of endobronchial suction (tracheobronchial toilet) than surgeons in this country. A combination of these methods may have a useful place in the treatment of painful chests, and the prevention of atelectasis and pulmonary consolidation. In spite of the encouraging reports of the effects of penicillin in chest surgery there can be no relaxing of the established principles of surgical treatment in these injuries. One feature of after-treatment that is scarcely mentioned in the American papers is breathing exercises. Over here the efficient and energetic pursuit of specially designed exercises is regarded as an essential part of treatment, and has been found to shorten convalescence and hasten recovery of lung function.

1. d'Abreu, A. L., Litchfield, J. W., Hodson, C. J. *Lancet*, 1944, ii, 197, 265; Nicholson, W. F., Stevenson, C. R. *Brit. J. Surg.* 1944 (special penicillin issue), **32**, 176; d'Abreu, A. L., Litchfield, J. W., Thomson, S. *Ibid*, p. 179.
2. Carter, B., De Bakey, M. E. *J. thorac. Surg.* 1944, **13**, 271.
3. Churchill, E. D. *Ibid*, p. 307.
4. Blades, B., Dugan, D. J. *Ibid*, p. 294.

NEW YEAR HONOURS

IN a world where so many able men and women are working to the top of their bent it is impossible that honours should be bestowed on more than a few of those who deserve them. But at least the long list of medical honours printed on another page recognises distinction in many branches of professional work. Sir Alfred Webb-Johnson, who receives a baronetcy, has been a progressive and vitalising president of the Royal College of Surgeons, combining affection for the past with a sense of the future. Sir Harold Whittingham, appointed KCB, is identified in our minds with the fine medical service of the Royal Air Force, which he has so ably directed since 1941. Of the new knights, Mr. Claude Frankau, as director of the Emergency Medical Services in London and the Home Counties, has borne a heavy responsibility during the past few fateful months. Brigadier L. E. H. Whitby, who, like Mr. Frankau, has distinguished himself in two wars, is now knighted for his services in the development of the sulphonamide drugs. The same combination of enterprise and patience that enabled him to recognise the therapeutic properties of sulphapyridine underlies his success in other fields, including the development of the Army Blood Transfusion Service. Dr. Alfred Howitt, MP for Reading since 1931 and chairman of the Parliamentary Medical Group, is unfortunately retiring from the House of Commons, where he has been a valuable exponent of the medical attitude.

Further afield knighthoods are also given to Colonel A. M. Cudmore, consulting surgeon to Adelaide Hospital and president of the Medical Board of South Australia, and Dr. A. L. Mudaliyar, FRCOG, vice-chancellor of Madras University. In congratulating all the recipients of these tokens of real esteem we hopefully wish them a happier New Year.

TEACHING HOSPITALS

ELSEWHERE we announce the formation of an Association of Voluntary Teaching Hospitals of Great Britain. It is thought that a body with special knowledge of the particular problems of teaching hospitals will serve a useful purpose in any discussions or negotiations arising out of the report of the Goodenough Committee on medical schools.

Dr. THOMAS FERGUSON, professor of public health in the University of Glasgow, Dr. R. E. LANE, lecturer in factory hygiene in the University of Manchester, Dr. A. B. STOKES, deputy medical superintendent of Mill Hill Emergency Hospital, and Mr. R. WATSON-JONES, civilian consultant in orthopædics to the Royal Air Force, have been appointed by the Minister of Labour to the national advisory council he has set up under the Disabled Persons (Employment) Act.

INCIDENCE OF DIPHTHERIA.—In the House of Commons Mr. WILLINK stated that according to returns received from all but a few local authorities in England and Wales, 2243 cases of diphtheria among immunised children were notified during the first half of this year, as against 6743 among non-immunised children. The number of deaths among immunised children was 16, compared with 368 among children not so protected.

Reconstruction

DENTISTRY OR STOMATOLOGY?

C. BOWDLER HENRY, MRCS, LDS

LECTURER IN ORAL SURGERY, ROYAL DENTAL HOSPITAL; STOMATOLOGIST, INVESTIGATION WING, METROPOLITAN EAR, NOSE AND THROAT HOSPITAL

SHALL dentistry become a separate profession like architecture; or shall it be more closely integrated with medicine? In other words, shall it be autonomous or auxiliary? It cannot be both.

This question has become urgent now that an interim report has been received from the Teviot Committee which has been considering how to provide a satisfactory dental service for the whole community.*

THE SEPARATE TRAINING

In the origin of dental training and practice we can see certain features which still handicap progress.

In the first half of last century dental practice was chaotic. Charlatans imposed upon a gullible public, and the medical profession disdained those few of its members who engaged in the calling. Nevertheless there were two sets of reputable practitioners—one composed of qualified surgeons, and the other of craftsmen who had worked up from the mechanical laboratory to the dental surgery. Though they approached practice from opposite directions, both sets saw the need for reform. A small band of surgeons led by John Tomes founded the Odontological Society (1856), drew up a curriculum of dental study (1858), instituted the London School of Dental Surgery with its concomitant charity (1858–59), and successfully petitioned for Parliament to grant the Royal College of Surgeons (1843–59) "power to institute and hold examinations for the purpose of testing the fitness of persons to practise as dentists ... and to grant certificates of such fitness." This is the LDS RCS Eng., the first examination for which was held in 1860.

The object was to establish a course of education for dentists which would be exactly comparable with the medical curriculum in period of study and cultural level. It was to be different somewhat in kind from that required for membership of the Royal College of Surgeons, but not inferior in degree. To give effect to this, two-fifths of the medical curriculum was omitted and in place of the medical subjects purely dental subjects were inserted.

A HYBRID CURRICULUM

The curriculum was designed by a subcommittee of the Odontological Society, and all the members of this committee were surgeons † practising as dentists. But they had to include plate-making in the curriculum, not merely because the adaptation of artificial teeth was a form of treatment which it was necessary for every dentist to know, but also because they wished to leave no part of dentistry outside disciplinary control. Furthermore, there were political considerations. The Odontological Society had a rival in the newly founded College of Dentists, which aimed at making dentistry autonomous and made a strong appeal to the craftsmen. A desire to gain the widest possible support may have been one of the committee's reasons for including so much of dental mechanics in its course of study. Moreover, at this period, though the science was in its infancy, the craft of plate-making, which still involved the carving of artificial dentures out of solid blocks of ivory, was at a high level. In consequence, the curriculum of the Odontological Society as approved by the Royal College of Surgeons constituted a compromise between the infant science and the established craft.

So practical was this curriculum that it remains fundamentally the same today, and all subsequent dental degrees have been founded on it. But in 1944 we recognise that the importance of the science far outweighs the importance of the craft. In the science lies prevention: in the craft there is only reparation, which is the eternal treatment of end-results. It was doubtless expedient to unite the two in 1860, but the offspring of their union is a conflict which has grown steadily and is still with us.

In recent years the status of dental practitioners has been openly discussed and the discontent felt by many has found expression. So far as I know, however, no-one has exposed the underlying cause of the trouble, which is this hybrid curriculum. The founders of the dental curriculum meant it to be equal in degree to the medical curriculum, and different only in kind. The expense and the time occupied were the same, and diplomates in dentistry might reasonably expect to be held in the same esteem as diplomates in medicine. But the part can never be as important as the whole, and it would have been better if training for practice in the part had been made shorter and less expensive than training for practice in the whole.

THE DOUBLE QUALIFICATION

Encouragement to take the full medical qualification has always been given. Speaking some 20 years after the dental curriculum had been in operation, John Tomes, to whose foresight and initiative we owe the dental diploma which he himself largely planned, said:

> "My strong advocacy of special, must not be interpreted as indifference to medical qualifications. I would give every possible encouragement to the attainment of the latter, not, however, as a substitute for, but as a supplement to the dental degree. Educationally, the relations of the membership to the dental licence may be regarded in the same light as the relations of the fellowship to the membership are regarded. This view will indeed take effect in certain appointments. In many of our hospitals, although the membership of the College of Surgeons is a full qualification, the governing body require that their surgical officers shall be Fellows of the College. Whenever the Fellowship of his College is required of a candidate—provided the Fellowship implies a higher degree of professional knowledge than the Membership—it may justly be required of the dental candidate for office that he shall possess the Membership in addition to the dental licence of his College."

But for the majority of dental students, while still in their student years, an addition of 6 months to the period of their dental studies, with a further 33 months afterwards for completing the medical course has not been practicable, because of the expense and the delay in becoming self-supporting. Furthermore, many students, lacking proper advice ab initio, have found too late their professional examinations were insufficient to enable them to go forward with a medical course after qualifying dentally; indeed in the past they have had to spend time reverting even to biology or to the examination in general education if they wished to take a degree course.

Thus we find that dentistry as a profession is a narrow cul-de-sac, and most entrants appreciate this too late.

The need for some form of higher examination has been felt by the profession and attempts have been made to satisfy it. But in so far as these introduce specialism within a specialty they are doomed to failure. On the clinical side no degree short of full medical qualification can be regarded as adequate in breadth and depth of basic knowledge.

SEPARATE STOMATOLOGY FROM PROSTHETICS

How then can the practice of dentistry and the training of dental surgeons be altered for the better? In the department of the teeth the natural trend is towards the application of prophylaxis based on biological investigation, such as the influences of heredity and nutrition. For prophylactic measures to be successful, those who apply them should have as complete a basis of biological knowledge as is needed for any other department of prophylactic medicine. It would be best I think to recognise that the present practice of dentistry is out of date, and at least to separate the biological from the prosthetic side.

There are several good reasons for adopting this course. Morally, it is not right that he who condemns a patient to lose teeth should profit by the fitting of artificial substitutes. Ethically, it does not enhance professional status that a dental surgeon should be a party to the sale of goods over the counter—which is how

* This paper was written before the interim report was published.

† The position of John Tomes is unique in that he had been apprenticed (1831) to a surgeon and had been appointed house-surgeon at the Middlesex Hospital (1837) when he became interested in odontology; and he did not in fact take the MRCS until 1859, although he was admitted FRS in 1850.

the law regards the fitting of dentures. Most important, however, is the need to improve the state of health of the community, which demands that the causes of dental disease should be studied and measures for prevention, ranging from antenatal care onwards, sagaciously applied.

To secure this improvement in dental health we need stomatologists—preferably men who have entered the dental sphere through the broad portal of medicine. I would not by any means exclude those who take a medical qualification after their training in dental surgery, but the approach through medicine certainly gives a man a broader view : he sees the dental structures in their natural place in the general field ; he sees that the reactions of dental tissues are those which his knowledge of physiology and histology would lead him to expect ; and his springboard for research is fixed more firmly than that of the man whose approach to these biological problems has been pre-eminently through the mechanical rather than the physiological laboratory.

If our goal is to produce many more men with this type of mind, then we must facilitate their training. We must make the specialty of stomatology equal in every respect to the other specialties of medicine, and this can be done only by removing dental mechanics from the stomatological curriculum and placing adaptive dentistry in a separate category of practice, that of dental prosthetics.

The recommendations in the brief paragraph on dental health in the report of the Goodenough Committee are totally inadequate and, since there is no reference to the Interdepartmental Committee on Dentistry, over which Lord Teviot presides, the impression left in the reader's mind is that so far as the Goodenough Committee is concerned, practice in the department of the teeth may still remain in the neutral zone of compromise in which the curriculum of 1860 originally placed it.

A SINGLE BASIC MEDICAL EDUCATION ?

In planning the nation's dental services the basis should be the stomatological department of the polyclinic or health centre—not the requirements of private practice, which must be secondary to public treatment. To increase the personnel, and get best advantage from the fully qualified, certain parts of treatment should be delegated to persons specially, but less expensively, trained. This entails the division of professional personnel into categories, and the following are suggested :

(*a*) Stomatologists.
(*b*) Dentists.
(*c*) Dental auxiliaries, such as :

Hygienists.	Radiographers.
Physiotherapists.	Speech-trainers.
Prosthetists.	

Stomatologists would act as consultants to the dentists, and would invariably hold such appointments as (1) advisers to the Crown ; (2) heads of dental services or dental branches of medical services in the Forces and similar Government services ; (3) visiting dental surgeons (but styled stomatologists) to all hospitals ; (4) heads of stomatological clinics ; (5) professors, senior teachers and directors of studies and research in university schools of stomatology and dentistry.

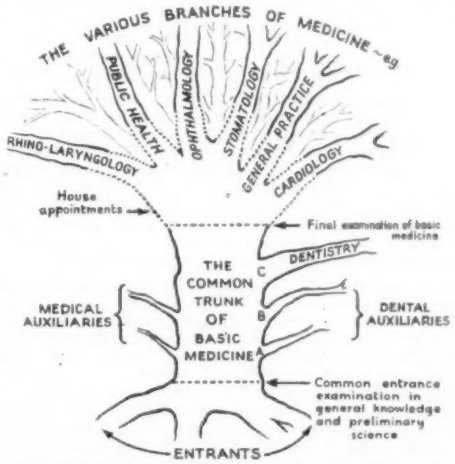
Dentists would carry out the ordinary operations of conservative dentistry—i.e., fillings, extractions, parodontal treatment and orthodontics—subject to the direction, though not necessarily continuous supervision, of the stomatologists. Several dentists could work under the supervisory control of one stomatologist.

In practice the dentists would fit between the stomatologists, to whom they would be subordinate, and the dental auxiliaries, to whom they would be superior.

Dental auxiliaries would carry out their duties under the direction of the stomatologists, with or without the interpolation of the dentists.

A "trunk and branch" system of training should be arranged, so that stomatologists, dentists and dental auxiliaries would receive appropriate parts of the same basic medical education. As stomatology is a specialty of medicine, the stomatologist would have to climb the whole trunk of basic medical study before getting on to his particular branch (see figure). The dentist would leave the trunk earlier ; his qualifying examination would be broadly equivalent to the present LDS, but he would have to pay more attention to general and special physiology and pathology and (since all plate-making would be excluded) less attention to dental mechanics. Dental auxiliaries would branch off still earlier—the prosthetists probably sooner than the hygienists but perhaps at the same level as the radiographers and speech therapists.

An essential feature of this scheme is that the highest degrees of medicine should be available to every aspirant



The tree represents a trunk and branch system of a suggested scheme of medical education, in which student auxiliaries as well as those intending to proceed to full qualification take suitable parts of the same basic instruction and examinations. In this scheme stomatology, with dentistry and its auxiliaries, finds an appropriate location.

A = dental auxiliary, e.g. Prosthetist.
B = dental auxiliary, e.g. Hygienist. C = dentist.

ascending the basic trunk : no-one should have to go back to the bottom and start again up some other trunk. For example, a dental auxiliary who left the main trunk at A, if he later wanted to become a dentist should be able to rejoin the trunk again at A and continue his basic studies from A to C. In the same way, a dentist who left at C should be able to convert himself into a stomatologist by rejoining the trunk at C and continuing his climb. Moreover, if a man who has chosen any of the dental branches—from stomatology to hygiene—desires to follow some other branch of medicine, he should be able to rejoin the trunk where he left it and go on with the appropriate courses of basic and special study.

A system of this kind would encourage and assist people of ability to rise from lesser positions to greater ones, and where a man found himself unsuited to dentistry it would enable him to transfer to another kind of medical work. These possibilities of advance or exchange would do much to get rid of the dead-end atmosphere of dentistry and thus increase the number of entrants.

The examinations, from those of the basic education up to qualification, for every grade from auxiliary to medical or dental practitioner, would have to be identical throughout the country. Dental education would be planned by those who plan medical education, advised as at present by a Dental Board, and would remain subject to control by the General Medical Council. It would be essential for medicine to adopt a broader and more understanding attitude towards dental problems than hitherto. Will medicine accept the trust ?

NUTRITION IN THE COLONIES.—Under the Colonial Development and Welfare Act, 1940, a free grant of £10,000 has been sanctioned to finance plans to deal with nutrition problems in the Colonies. The money will be spent on the payment of temporary technical staff, the training of staff, and the provision of technical equipment or materials required for experimental work.

Special Articles

THE TASKS OF UNRRA

FROM A CORRESPONDENT

A WISE old medical superintendent once said that it took two years to make a hospital from the time it was opened or reopened. However good the personnel were as individuals, it took this time for them to learn to work together—subconsciously, to know what was the business of each and which were the duties of others. If this is true of a small unit, how much more may it be true of a large body such as UNRRA? The agreement that brought this organisation into being was signed on Nov. 9, 1943, and the London office was opened only last March. What has it taken on? The provision of:

> 1. Essential consumer goods for immediate needs, such as food, fuel, clothing, shelter, medical supplies; and materials such as seeds, new materials, and machinery.
>
> 2. Essential services such as health and aid in repatriation of displaced persons; the rehabilitation of public utilities (light, water, communications) in so far as they could be restored for immediate needs and to enable a recipient country to produce and transport relief supplies for its own and other liberated territories; and assistance in procuring equipment for schools and universities.[1]

It is understood that, save in exceptional circumstances, UNRRA will take on these duties only in liberated countries. In ex-enemy countries after occupation they will be the function of the military authorities.

In these liberated countries its representatives will be subject to two limitations. First, "the agreement stipulates that the Director-General shall not undertake activities in any area in which the military are operating without the consent of the military command, and that he will be subject to such control as the command may find necessary."[2] Secondly, once a government has been set up in a liberated area, "the Administration would operate only after consultation with, and with the consent of, the government concerned."[3] This second provision is a logical conclusion of the aim of "helping the people to help themselves" which is the signal under which UNRRA has taken sail.

We live in a stricken world, whose recovery will be slow. At the moment we have to keep people alive; and that means food, clothing, fuel, and shelter, with the emphasis on the food. Now there are three things in the problem of food—its provision, its transport, and its distribution. The first two are useless without the third, and this demands the work of many, carriage, and a constant supply. There may be danger of loss between the port of unloading and the mouths of the peasant or the working man. We must face facts, and it would be a grave waste for food to be transported across the Atlantic and unshipped at a European port only to disappear into the black market.

So UNRRA reserves to itself the right if necessary to distribute the relief supplies.

> "Dean Acheson, Chairman of the Council, remarked that UNRRA could not reconstruct the world, neither could it be limited to a mere 'soup-kitchen' charity. The scope of UNRRA, he pointed out, lay somewhere between these two extremes."

This is a true saying; but the soup-kitchen must come first. Without calories to keep their muscles going, the provision of seeds and machinery will be of small avail; and medical supplies can do but little against disease in a starving population.

The other problem that UNRRA has set itself is the restoration to their own homes of all those persons who have been displaced from them. The task is immense. UNRRA is arranging to undertake it both in enemy countries and in those the enemy have overrun and conquered. Nearly all these many people will wish to return on the moment the bugles sing truce, and will shortly be screaming at the "inefficiency" that has frustrated their desire. But alas! it is impossible. The job will take time. And during that time the displaced persons will need food, clothing, and temporary shelter; with which arise medical problems at the present site of habitation, on the journey, and on arrival at the old home. Not least of these will be the mental one; and of that not the least part will be the need to keep them occupied in mind and body, doing their own share for the restoration of the world, without feeling that they are still subjected to the slave labour for which they were originally uprooted.

It may be that UNRRA is not moving quick enough, but immediate returns are hard to produce in so vast a scheme. It may be that we shall shortly see a great acceleration; and this is needed, for many are starving. It is unjust to judge the organisation for lack of results at this moment. But men and women will go on starving until results are obtained.

1. UNRRA. The Story of the United Nations Relief and Rehabilitation Administration. HM Stationery Office. 4d.
2. *Ibid*, p. 5. 3. *Ibid*, p. 9. 4. *Ibid*, p. 8.

MEDICINE AND THE LAW

Criticism of a Coroner

A WRITER, said Fitzgerald, J. (in R. *v.* Sullivan, 1868), may freely criticise the proceedings of courts and of individual judges—"nay, he is invited to do so in a free, fair, and liberal spirit"—but he must write without malignity and he must not impute corrupt or malicious motive. The same distinction was made in 1928, in R. *v.* Editor of the *New Statesman*, between legitimate criticism and such an imputation of unfairness as would justify the court in committing the author for contempt. In a recent libel action at Manchester assizes a coroner complained that a newspaper had gone on to the wrong side of the line; the court, however, took the opposite view and dismissed the coroner's claim with costs.

Somebody, it appeared, wrote to the *Stockport Advertiser* a letter recounting a visit to a Stockport inquest. "If what I witnessed was an example of the manner in which such inquiries are conducted, it is high time that some public protest was raised; a coroner's inquiry is surely an inquiry to determine cause of death and not an inquisition; our British judicature and legal profession are known for the inherent quality of courtesy and fairness." Mr. J. A. K. Ferns, the coroner who was thus attacked, contended that this imputed discourtesy and unfairness to him and insinuated that he ought to be removed from his office; it also exposed him to public ridicule. The newspaper pleaded that what was written was not defamatory but was fair comment on a matter of public interest. Having given evidence in support of his claim, Mr. Ferns was cross-examined with a view to establishing what he stoutly denied—namely, that he had been ill-tempered to a witness, had shouted aggressively at her, and had told her not to mislead the court. There were other witnesses for the plaintiff. One, a former coroner's officer, said he heard no shouting, but in cross-examination seemed to agree that the coroner's manner had been slightly different since the letter was published. Another, a detective officer, denied warning a prospective witness that the coroner was a very peculiar man before whom witnesses must be careful. A third, the caretaker at the public-assistance office, denied that there had been any shouting or bullying. When the plaintiff's case was closed, the judge declined to accept the suggestion made by defendants that there was no libel. The witnesses for the defence were a girl who complained of the treatment she had received when giving her evidence at the inquest, two others who gave evidence on the same occasion, the writer of the letter, a reporter on the defendant newspaper's staff, and the assistant editor who had seen the letter-writer before publishing the letter and had formed a good opinion of his sincerity.

Mr. Justice Stable, who found for the defence, said it was clear that the plaintiff's manner made an unfortunate impression upon people at the inquest. If comment was honest, and not a cloak for private spite or grudge, it was a good thing that people occupying public positions should be exposed to public criticism. The letter was fair comment. "Let me make it plain," added the judge, "that the dismissal of the plaintiff's suit does not mean that Mr. Ferns is not perfectly well qualified to hold his office or that he has not discharged his duties quite adequately for many years or that he is unfit to continue doing so. Many of us would no doubt benefit from a little candid criticism from outside." Mr. Ferns, said the judge, must not take the matter unduly to heart. "After nearly 40 years as coroner

I am not surprised that Mr. Ferns should get a little testy with witnesses; I have had only six years and I get a little testy myself." Thus the matter ended with honours easy. Evidently the plaintiff failed to establish that the letter went as far as to suggest that he ought to be removed from office; short of that, the writer, if honest in his criticism, had a free hand.

NEW RUSSIAN MEDICAL ACADEMY

THE new Academy of Medical Sciences of the USSR has lately held its inaugural meeting in Moscow. Georgi Miterev, People's Commissar for Health, addressing the meeting, said that the increasing differentiation of medical research had necessitated the creation of this coördinating centre. The immediate task of the Academy will be to study methods of preventing infectious disease, promoting the healing of wounds, and combating wound shock. General Nikolai Burdenko, surgeon-in-chief of the Red Army, has been elected president of the Academy; the vice-presidents are Alexei Abrikosov (pathologist), Mikhail Malinovsky (gynæcologist), and Pyotr Kuprianov (surgeon); and the secretary Vasily Parin (physiologist). The presidium consists of Alexander Bogomoletz, Hippolyte Davidovsky, Julian Dzhanelidze, and Leon Orbeli. The Academy at present has 60 members, but a further number, as well as some corresponding members, are soon to be elected.

NEW YEAR HONOURS

THE honours list issued on Jan. 1 contains the following names of members of the medical profession:

Baronet

Sir ALFRED EDWARD WEBB-JOHNSON, KCVO, CBE, DSO, MB MANC., FRCS

KCB (Military)

Air-Marshal Sir HAROLD EDWARD WHITTINGHAM, KBE, MB GLASG., LL D, KHP, RAF

Knights Bachelor

Colonel ARTHUR MURRAY CUDMORE, CMG, MB ADELAIDE, FRCS
President of the Medical Board of the State of South Australia.
CLAUDE HOWARD STANLEY FRANKAU, CBE, DSO, MS LOND., FRCS
Director of EMS, London and Home Counties.
ALFRED BAKEWELL HOWITT, CVO, MD CAMB.
MP for Reading since 1931.
Brigadier LIONEL ERNEST HOWARD WHITBY, CVO, MC, MD CAMB., FRCP
Assistant pathologist to the Middlesex Hospital.
Diwan Bahadur ARCOT LAKSHMANASWAMI MUDALIYAR, MD MADRAS, LL D, D SC, FRCOG
Vice-chancellor of the University of Madras.

CB (Military)

Brigadier WILLIAM ROSS STEWART, CIE, MB EDIN., FRCSE, KHP, VHS, IMS
Major-General DAVID TURNBULL RICHARDSON, MC, MB EDIN., KHS, RAMC
Air Vice-Marshal ANDREW GRANT, CBE, MB EDIN., KHS, RAF

CSI

Major-General JOHN SIMSON STUART MARTIN, MB EDIN, KHS, IMS seconded IAMC
DDMS, central command, India.

CMG

HENRY SPELDEWINDE DE BOER, MC, MRCS
DMS, Uganda.
Lieut.-Colonel WILLIAM FRANCIS ELLIS, OBE, MRCS, RAMC retd.
Press attaché at HM Consulate-General, Tangier.

CIE

Major-General WILLIAM CALDER PATON, MC, MB EDIN., FRCSE, IMS
Surgeon-general with the government of Bengal.
Brigadier DONALD MACDONALD FRASER, MB GLASG., IMS seconded to IAMC
Inspector of medical services, general headquarters, India.
Rai Bahadur TRIDIB NATH BANARJI
Principal, Prince of Wales Medical College, Patna, Bihar.

CVO

WALTER GRAHAM SCOTT-BROWN, MD CAMB., FRCS

CBE (Military)

Surgeon Captain THOMAS BENJAMIN DIXON, MRCS, KHP, RNVR retd
Brigadier JOHN STRUTHERS FULTON, MD EDIN., MRCP, RAMC TA
Group-Captain EDWARD CYRIL HENRY FOREMAN, MRCS, RAF

CBE (Civil)

Mrs. MARY GEORGINA BLACKLOCK, MB BELF.
Lecturer, Liverpool School of Tropical Medicine.

HUGH ERNEST GRIFFITHS, MS LOND., FRCS
Surgeon to the Albert Dock Hospital and founder of its fracture clinic and rehabilitation centre.
THOMAS BAILLIE JOHNSTON, MD EDIN.
Sector hospital officer EMS London; professor of anatomy, Guy's Hospital Medical School.
JAMES RÖGNVALD LEARMONTH, CH M GLASG., FRCSE
Surgical director, EMS, south-eastern area of Scotland, and professor of surgery in the University of Edinburgh.
Lieut.-Colonel ALFRED ALEXANDER WEBSTER PETRIE, MD EDIN. and LOND., FRCP
Superintendent, Banstead Mental Hospital.
GEORGE BLYTH WALKER, MB EDIN.
Deputy director of health service, Nigeria.

OBE (Military)

Surgeon Commander THOMAS FRANCIS CREAN, LRCPI, RN
Surgeon Lieut.-Commander EDWARD JAMES STARBUCK WOOLLEY, MB LOND., RNVR
Colonel JOSEPH ALEXANDER BINGHAM, MB GLASG., FRCSE, FRFPS, RAMC
Colonel WILLIAM LOREN FENNELL, MD MANITOBA, MCPS, IMS
Lieut.-Colonel LESLIE FLETCHER, MB GLASG., RAMC
Lieut.-Colonel IAN MORISON ORR, MD, CH M GLASG., FRCSE, RAMC
Lieut-Colonel JAMES ELLIOT SNOW, MRCS, RAMC
Colonel THOMAS JAMES LOGAN THOMPSON, MÇ, MB DUBL., RAMC
Group-Captain JAMES FREDERICK SANDOW, MRCS, RAF
Wing-Commander RICHARD WHITE BERNARD ELLIS, MD CAMB., FRCP, RAFVR
Wing-Commander THOMAS JAMES MYLES GREGG, MB DUBL., RRAFO
Wing-Commander CECIL WILLIAM KIDD, MD BELF., AAF
Wing-Commander NORMAN RALPH SMITH, MRCS, AAF
Squadron-Leader AGNES LILIAS DOVEY, MB EDIN.
Squadron-Leader JOHN CARY GILSON, MB CAMB., MRCP, RAFVR
Squadron-Leader GEORGE HARVEY DUTHIE, MB EDIN., AAF
Squadron-Leader BASIL GERALD PARSONS-SMITH, MA CAMB., MRCP, RAFVR

OBE (Civil)

ROY MERVYN HUMPHREYS, DM OXFD
Senior physician, Sudan medical service.
Miss WENEFRIDE THOMPSON, MBE, MRCS
St. Luke's Mission Hospital, Lakhimpur, Dribrugarh, Assam.
Lieut.-Colonel KEITH SIMPSON FITCH, FRCSE, IMS
Deputy surgeon-general, Famine Relief, Bengal.
Major ALAN ALEXANDER PULLAR, MB NZ, FRCSE, IMS
Presidency surgeon, Bombay.
PETER ALPHONSUS CLEARKIN, MD BELF.
Government bacteriologist to public hospital, British Guiana.
ARTHUR EDGAR DE CHAZAL, MS LOND., FRCS, MRCP
For public services in Mauritius.
ANASTASIOS GAVRIELIDES
Consulting surgeon, medical department, Cyprus.

MBE (Military)

Surgeon Lieutenant MALCOLM JOHN MAY, MRCS, RNVR
Surgeon Lieutenant ALASTAIR WILLIAM SMITH, LRCPE, RNVR
Major AVYAKTANAND, IAMC
Captain HANNAH BILLIG, GM, MB LOND., IMS
Lieutenant KOLLEMPARAMPIL EAPEN EAPEN, IAMC
Captain OLIVER GARROD, MRCS, RAMC
Major THOMAS THEODORE SCHOALES HALL, MD BELF., RAMC TA
Major EDWARD WATSON HART, MB CAMB., MRCP, RAMC
Major ANDREW DEREK KELLY, MB DURH., RAMC TA
Major ABDUL HAQUE MALLICK, IAMC
Major WILLIAM D'AUVERGNE MAYCOCK, MD MCGILL, RAMC
Major EDWARD JAMES PELL, IAMC
Major VERNON DONALD VAN SOMEREN, EAAMC
Major DEREK JOHN WIGGINTON, MRCS, RAMC TA
Squadron-Leader EMMIE DOROTHY FENWICK, MRCS
Squadron-Leader ATHOL GEORGE RIDDELL, MB LOND., RAFVR
Flight-Lieutenant GEOFFREY HALE, MB CAMB., RAFVR
Flight-Lieutenant JAMES HARPER, MB EDIN., RAFVR
Flight-Lieutenant GWILYM MURRAY JONES, MRCS, RAFVR
Flight-Lieutenant ALEXANDER SKENE, MB EDIN., RAFVR
Flight-Lieutenant HAROLD GEOFFREY WOLSKEL, MRCS, DRCOG, RAFVR

MBE (Civil)

SHARAT SHASHI KUNDU, MB
Officiating civil surgeon, Manipur State, Assam.
RAMIRO CAUCHI INGLOTT
DMO Malta.
WILLIAM CECIL WIGAN, MRCS
For welfare services in Nyasaland.

Kaisar-i-Hind Gold Medal

PERAKATHU VERGHESE BENJAMIN
Medical superintendent, Union Mission Tuberculosis Sanatorium, Arogyavaram.
NORMAN MACPHERSON, MB LOND., FRCS
Surgeon, United Missions Hospital, Vellore, and lately doctor-in-charge, Afghan Mission Hospital, Peshawar.
Colonel HENRY EDWARD SHORTT, CIE, MD, D SC ABERD., IMS
Inspector-general of civil hospitals, Shillong, Assam.
Lieut.-Colonel FRANK TOMISMAN SIMPSON, MC, MB DURH.
Lately MO in the Bihar coalfields.

In England Now

A Running Commentary by Peripatetic Correspondents

IN Pongo-Pongo, a Pacific atoll, where a number of young Anglo-Saxons are marooned to pursue their celibate calling, there is one small school of thought that holds that, if sanity is to be retained, an occasional "drunk," "blind," or other period of anæsthetisation is obligatory. Some of this school carry out their view with cold-blooded forethought, others only after a struggle with the gods of civilisation, but they all point out that unbelievers become thin and lank, querulous and censorious. If one calls the agencies by which these periods of unconsciousness are obtained by those bad little words "gin" and "rum" there is something gross and unpleasant about this view, but if one called them, say, di-thio-hic-alcohols or gave them a formula with a lot of CHs lolling round in a circle with possibly an S trying to butt in from outside and a P or so in the wing, then the matter could be studied with interest. After all, among the lowlier Brethren of the Lamp, the deciduous trees stay blotto for half the year, the dormouse and the squirrel hibernate, and even that arch-priest of progress, Man, must spend anything from a quarter to a third of his life inert, asleep. True, the Bosun Bird never seems to sleep at all, but he dies young and serve him right. It's all very well for you people in England to look down your noses at this brutishness, but with you book-covers do not go mouldy in a week—even the vulcanite of one's tobacco pipe can grow a mould on Pongo-Pongo—nor are you for ever jeered at by the imprisoning surf. You have your varied interests and that delightful form of atavism, feminine companionship. Moreover, of course, you do—and I write especially to say I hope you did—go back with one accord, all of you, at a stated time, to a childlike and gastric world, to a spell of happy communism, to a day of early legend and song, when only that which is lovely in the past is remembered and the future promises to glow and grow in sunshine: in short, from this coral speck—curse it—go nostalgic hopes that you have all had a very happy Xmas. (As there are no Xmas cards on P-P, please imagine a Robin, rampant; a Xmas pudding plus holly, couchant; and a bottle of Bass, charmant.)

* * *

It was nice of THE LANCET to give us a round game in the Xmas number! Take 500 girls, pencils, and bits of paper and ask them the following questions: (1) *How long do you like to sleep?* Not, mark you, "How long do you usually sleep?"—a very different pair of pyjamas. (2) *Are you a heavy, light, or medium sleeper?* These words may mean different states to different people, nor am I convinced that the sleeper herself is a good judge of the question. (3) *Do you wake in the morning fresh or heavy?* This may depend on what preceded sleep, the state of the bowels, or whether the boy has written lately as well as the quality of the sleep. (4) *Do you ever dream?* Of course everybody dreams, as any "non-dreamer" can demonstrate if he puts a pad and pencil by his bed and conscientiously tries to jot down his transient memories of sleep—and does this for several months. "Do you ever dream?" is really asking, "Before or after being unconscious are you ½ or ⅔ or ¾ unconscious?" But to put these haphazard answers to ill-framed questions into the scientific apparatus of tables and subject them to statistical analysis is pure nonsense. You might just as well ask, "Which do you like best, Joad, mince-pies, or the smell of onions?" and draw weighty conclusions from the answers; nor is the result more impressive if you append a long bibliography including Mrs. Beeton, Middleton on Onions, and Joad on Joad. I once knew a man who kept tadpoles in a priceless Chinese vase and also a youth who made toffee in a valuable silicon flask in the lab. but this... It's like putting a cough-cure picture in a frame meant for an "old master," it's...

* * *

Trying to run a lab. in India is bad for the arteries. Last week I discovered that my assistant had suddenly decided to use double quantity of CSF for sugar estimations without making any corresponding change in the calculation. She was obviously surprised that I found this course of action strange; yet she must be intelligent, or she couldn't keep a sari from falling all over the floor in ungainly folds, as they seem to do when English girls try to wear them. I interviewed a havildar who had spent eight years in a biochemistry laboratory, and two years in a clinical side-room. Feeling rather ashamed at asking anything so simple, I said, "How do you estimate blood-urea?" After a little thought, he replied, "Estimation of urea in blood. Take benzidine and acetic acid ...." I stopped him quickly, asked him if he had done many, and was quite relieved when he said "No," and hinted that his activities in the clinical side-room had been limited to routine urine-testing. I was a bit discouraged by now, but I asked him what he had done in his eight years at the other lab. He said "Vitamins." When I tried to find out which vitamins, he didn't know. I asked what methods he had been using, and he quickly explained that "the doctors" knew what was going on, but he didn't. I pictured him plodding through his daily task for eight years and never once reasoning why; and I thought he perhaps typified one of the reasons why India isn't quite so advanced a country as America or England. The thoroughly westernised Indian will give you the result which he finds; the "native" Indian will give you no result; but the "educated" Indian, the stuff of which laboratory technicians are made, will give you the result which he thinks you want. In this moderately rational desire he is handicapped by an imperfect understanding of what you really do want, and if you suggest to him that you want a "true" answer he is most pained, and thinks you quite unreasonable. Moralising a little, it would seem that intelligence and a keen desire to please are not enough; they must be combined with the ability to face discordant and unexpected facts, the "brute facts" of which our experience is built. This ability is an important part of the "scientific conscience," and until it becomes less exceptional in Indians they will never leave their phantasy-world of political formulæ to enter the sphere of common day.

* * *

Very rarely does it fall to my lot to enjoy the luxury of illness, but when the lower half of my alimentary canal spent a night behaving in that internecine fashion so characteristic of liberated countries I decided to re-establish law and order by spending the next morning in bed, and, for once in a while, to let my patients get well without interference.

Let me hasten to disabuse the minds of townsmen who may fondly imagine that diurnal sleep is easily wooed and won in the heart of the country. It is years since I spent a morning at home and the experience is one that I am not anxious to repeat. The Treasure looked in at intervals to ask if there was anything I wanted. My daughter spent some time strapping a restless pony apparently in the front porch. My elder son devoted the morning to clattering up and down the hall in a pair of heavy boots, an activity which stimulated the dogs to bark. The Treasure, who likes music while she works, accompanies it on the voice, while my younger boy, not to be outdone, prefers endlessly, flatly, and inaccurately to intone the twice-times table. Meanwhile the telephone adds its quota of sound, and the raucous cries of my wife striving to communicate with the deaf gardener evoke a spirit of emulation in the goats.

Next time I lie up I shall do so in an iron-foundry. There is at least a steady sequence about the noises there which I should probably find soothing.

* * *

Recent discussion on postoperative retention of urine has centred on the relative merits of various drugs given by injection. In one hospital the problem seems to have been solved satisfactorily, even in cases of laminectomy, by the postoperative administration (by mouth) of the local brew of cider in doses of ½–1 pint.

* * *

It had been a bad morning. The unhealthily hot and steamy atmosphere of the operating theatre was heavily charged with pent-up emotion. The tonsillar fossa oozed. The tonsillar fossa went on oozing. The surgeon demanded viper venom, a new commodity in those days. A junior nurse retired to the fresher atmosphere of the store room. . . . Minutes passed and the fossa went on oozing. Says the surgeon to the theatre sister, "How do you expect me to stop this fossa bleeding if your nurses can't even find a simple bottle of viper venom?" He said more than that actually. Says the sister

promptly, "Try spitting into it." The junior nurse returned, empty handed and apprehensive, to find the theatre atmosphere merely pleasantly hot and steamy.

Parliament

ON THE FLOOR OF THE HOUSE

MEDICUS MP

THE last three days of parliamentary work before the Christmas recess were inevitably dominated by the serious military situation on the Western front and by the events in Greece. Both have increased the strain on our resources, and because of this growing strain our mobilisation for war effort has been intensified.

The announcement of a new call-up of a quarter of a million men, to be obtained partly from civil life and partly by a comb-out of static units in the Army and from the Navy and Air Force, emphasises the need, while another announcement, that ATS are to be sent abroad in considerable numbers, underlines the effort now required. For the ATS are to be sent to release men for combatant duties. Unmarried women of 21 and over are to be posted in the same way as men, with due regard to the case of those with young children and other special circumstances. But women of 19 years and over will be accepted as volunteers. The Secretary of State for War, Sir James Grigg, said he was confident that this Government decision would be welcomed as a necessary and expansive deployment of available resources. ATS will not be posted, either compulsorily or as volunteers, to Burma or West Africa, and only volunteers will be sent to India.

It is however in these Eastern theatres, as Lord Munster's report shows clearly, that women have a great part to play. The 250 VAD nurses who volunteered for service in India have now been distributed to 20 combined field base hospitals where they are nursing both British and Indian wounded, and both doctors and matrons would welcome an increase in their numbers. The ATS to be sent to India will no doubt play, in their own sphere, an equally effective part. And Lord Munster wants to send out from this country to India a large number of women willing to help in the work of the Red Cross and St. John, Toc H, the Salvation Army, the YWCA, and similar organisations.

Lord Munster's report includes a page on the medical services. The casualties from illness in Burma have been heavy, as is already known from the published figures, and a great drain on man-power. They will not become less while men have to be kept in these unhealthy tropical conditions over a period of years. Malaria, dysentery, and typhus are rife in the Assam-Burma area. Medical services are said to be maintained at a high standard of efficiency, but there are shortages of medical equipment, including refrigerators, fans, and fly-proof netting. Lord Munster achieves a classic understatement when he says apropos of complaints of insufficient and bad-quality food in hospitals—that "Indian cooks . . . unless constantly watched are likely to depart from the highest standards of hygiene." Shortage of medical staff in India, especially of surgeons and trained nurses, persists, despite the arrangements made by the Souttar Committee on their visit to India last year which led to a great increase of Indian medical personnel.

But the strain on medical resources is not confined to India. One way to relieve it is to bring the war against Germany to a victorious conclusion at an early date, and even after that event the demand for the services of doctors for relief work will be considerable. We may however hope that a large proportion of the medical personnel needed in Europe will be provided by the European countries themselves. Some of them perhaps could help us by lending their doctors to the Allied Forces still in combat in other parts of the world.

In anticipation of the new world to come and the probability of an early election the House passed the second reading of the Representation of the People Bill which deals with future elections to Parliament. An Act enabling local elections to be held at early dates received the Royal Assent on the last day on which the House sat. So machinery to review local government authorities and the authority of Parliament itself by a general election will soon be in gear.

FROM THE PRESS GALLERY

Welfare of British Forces in the Far East

IN the House of Commons on Dec. 20 Mr. CHURCHILL said that Lord Munster, who had recently made a tour of India and the Burma Front, had prepared a report which was being issued as a white-paper. A great deal had been done to improve and expand welfare facilities for the British Forces, but clearly more could be achieved if additional resources and personnel could be provided from outside India. The Government would apply themselves energetically to that problem. Their first concern was, naturally, the welfare of the sick and wounded. Lord Munster had visited 34 hospitals and, from a layman's point of view, he was satisfied that the medical facilities were maintained at a high standard of efficiency despite the administrative difficulties of an extended front and poor communications. Lord Munster had drawn attention to certain shortages of medical personnel in India. Every effort was being made to improve the position, but the Government had to pay regard to the many other claims, both civilian and Service, on the available supply of doctors and nurses. Consideration was being given urgently to Lord Munster's proposals, including his suggestion that further members of the Voluntary Aid Detachment should be sent out to India. In some directions, said Mr. Churchill, it would not be possible to achieve what was desired until the defeat of Germany enabled greater resources to be diverted to the East. But plans had been made so that when these resources became available they could be diverted without loss of time to the amelioration of the conditions of service of the men and women of the Forces and the Merchant Navy who were called upon to continue to fight against Japan. Special attention was being given to the provision of a varied diet and up-to-date hygienic systems of preparing and cooking food.

QUESTION TIME

Expenditure on Medical Research

Sir E. GRAHAM-LITTLE asked the Lord President of the Council whether he could give any estimate of current annual expenditure on all branches of medical research in this country, including expenditure by Government establishments, including Service and Supply departments and the Colonial Office, on physiology, pharmacology and pharmaceutical preparations, biochemistry, pathology, bacteriology, nutrition, ophthalmology, ophthalmic optics, clinical medicine and surgery, dentistry, public health and all other questions involved in the promotion of health and prevention of disease; and what approximate proportion of such research was financed or controlled directly by the Medical Research Council.—Mr. C. ATTLEE replied: It is not possible to give any comprehensive estimate of current annual expenditure on medical research in this country, as investigations in this broad field of inquiry are financed not only out of public moneys but also by private funds administered by universities and hospitals and by independent research institutes and organisations. No complete information is available about these latter resources, and only a relatively small part of the total expenditure from funds of private origin is controlled by the Medical Research Council. As regards public funds, the main item is the expenditure of the Medical Research Council, amounting to about £290,000 in the current financial year; of this £250,000 is provided by the Parliamentary grant-in-aid and the remainder from contributions and repayments from various Government departments and sundry credits. The total expenditure directly allocated to medical research through other Government channels is at present about £100,000 per annum, mainly on special investigations by the Services into war problems. This takes no account, however, of research undertaken by the members of medical services, with the Armed Forces and otherwise, in addition to the other duties for which they are primarily employed; nor does it take account of research done by institutions in receipt of Government grants for mainly educational work.

Plans for Women Medical Students

Dr. EDITH SUMMERSKILL asked the Minister of Health whether he could now make a statement on the Goodenough report, including the admission of women students to medical schools.—Mr. H. WILLINK replied: I hope to be able to make a statement early in the New Year.

Advisory Council for the Employment of the Disabled

The MINISTER OF LABOUR announced that he had constituted his National Advisory Council under the Disabled Persons (Employment) Act, 1944, as follows :

Viscount Ridley (chairman).
Mr. W. P. Allen.
Lieut.-Colonel the Hon. J. J. Astor, MP.
Brigadier-General A. C. Baylay.
Mr. H. L. Bullock.
Major Sir Brunel Cohen.
Captain G. Crawshay.
Mr. A. Deakin.
Mr. E. De Ath.
Chief Commander E. L. Dixon.
Chief Petty Officer L. A. G. Faulkner.
Prof. T. Ferguson, MD.
Lieut.-Colonel H. Rivers Fletcher.
Mrs. M. K. Gartside.
Councillor A. Gilzean.
Mr. I. J. Hayward.
Mr. R. A. Keys.
Dr. R. E. Lane.
Mr. W. A. Lee.
Dame Anne Loughlin.
Major J. C. Poole.
Squadron-Leader W. Simpson.
Chief Officer G. O. Snow, WRNS.
Major-General R. N. Stewart.
Dr. A. B. Stokes.
Lieut.-Commander G. W. Style.
Mr. C. G. A. Ward.
Mr. J. Watson.
Mr. R. Watson-Jones, FRCS.
Lieutenant the Hon. R. F. Wood.
Mr. R. E. Gomme, of the Ministry of Labour and National Service (secretary).

Maternity Accommodation

Mr. W. R. PERKINS asked the Minister whether he was aware that the management committee of the Cotswold Maternity Home, Tetbury, Gloucestershire, had decided to close the hospital owing to the shortage of staff, with the result that 16 maternity beds would be lost to the area and 38 patients who were due to go to this hospital during December and January would have to go to Cheltenham ; what steps he had taken to prevent the closing of this hospital ; and whether, in view of the industrial activity in the Stroud valleys, he would reconsider his refusal to allow a new maternity hospital to be opened near Stroud.—Mr. WILLINK : I was not previously aware that this maternity home was closing down. I am having urgent inquiries made in conjunction with the Minister of Labour and National Service. I think it better to secure the use of existing accommodation by providing necessary staff than to provide additional accommodation in which similar staffing difficulties would have to be met.

War-time Nurseries

Mr. H. MCNEIL asked the Minister if he was aware that a recent circular of the Ministry to welfare authorities anticipating the closing of many war-time nurseries and curtailing the recruitment and training of probationer nursery nurses had alarmed these authorities ; and would he take steps to satisfy the widespread public demand for the continuance of these nurseries on a peace-time basis under post-war housing conditions and for the welfare of mothers and children, in the absence of any provision for home helps, even if the mother was not employed outside the home.—Mr. WILLINK replied : War-time nurseries have been provided at the cost of the Exchequer as an aid to war production. Their purpose has been to enable women with young children to help in the war effort and where these facilities are no longer required their continuance for this purpose at the cost of the Exchequer cannot be justified. I hope, however, that it will prove possible for a number of the war-time nurseries, where the site and the premises are suitable, to be taken over by local education authorities as nursery schools.

Health Services in Ethiopia

Mr. CREECH JONES asked the Secretary of State for Foreign Affairs if he was aware that the Society of Friends ambulance unit, which had been providing three-quarters of the medical personnel of Ethiopia, recently gave that government notice of its intention to withdraw because of the increasing difficulties of operation, shortage of drugs, funds, personnel and inefficiency in government administration ; and whether, in view of the resignation or non-renewal of 13 of the 30 British subjects who accepted appointments in 1942 as advisers to the Ethiopian government, further steps were being taken by His Majesty's Government to help forward the health and development of Ethiopia.—Mr. A. EDEN replied : I understand that the Friends Ambulance Unit provides about half the European medical personnel at present in Ethiopia and that their intention (of which the Ethiopian government were fully aware) when they first arrived in Ethiopia at the end of 1942 was to remain in that country for one year only pending the organisation of Ethiopian medical services. The unit has now given its devoted services for twice that period, and I understand that the Society of Friends now feel that they should be free to use it elsewhere. As regards the health and development of Ethiopia, these are matters for the Ethiopian government. HM Government in the United Kingdom have, however, an obligation to assist the Ethiopian government in obtaining the services of British subjects whom they may wish to employ in a medical or any other capacity, and in the course of the negotiations for the replacement of the Treaty of 1942 HM Government have offered help calculated to promote the health and development of the country.

Repairs to Hearing-aids

Lieut.-Commander L. W. JOYNSON-HICKS asked the President of the Board of Trade whether he was aware that owing to the shortage of spare parts there was prolonged delay in repairing hearing-aids ; and if he would release a greater quantity of an approved quality for civilian use.—Mr. E. H. DALTON replied : I regret that there have been delays in repairs, due in the first place to the heavy and increasing Service demands for valves, and in the second place to the fact that some manufacturers, contrary to the advice of the Board of Trade, have made new sets with valves needed for repairing old ones.—Lieut.-Commander JOYNSON-HICKS : Is anything being done to improve a situation which the Minister recognises is so bad ?—Mr. DALTON : We are looking at it from every direction, but skilled labour is very short.

CANADA

(FROM OUR OWN CORRESPONDENT)

THERE were 350 applications for registration in the faculty of medicine of the University of Toronto this fall, and 150 were provisionally accepted. These will be subjected to an aptitude test, and low grading in this test is held to be an almost certain prediction of failure at some stage of the course. Such students are advised to enter on some other line of study.

A peripatetic correspondent in THE LANCET (Sept. 9) protests against the idea that one man should have the authority to say who should or should not study medicine. Canadian universities have never been threatened by anything like this. Committees of faculty make the first selection, largely upon standing obtained in school examinations set by provincial departments of education. The revelations of the aptitude test are not before them. There is no opportunity for students rejected by the committees to display any aptitude they may have, which might conceivably be greater than that of other students chosen because of academic proficiency in high school.

Students of theology in many colleges are tested as to the validity of their " call " to preach. The aptitude test is the nearest approach we have to a means of selecting the " called " in medicine from those who have been deceived by some other noise. That being so it would seem desirable to apply it to the whole group of applicants, the final selection being made from the most promising candidates.

The large number of young people applying for registration in schools of medicine indicates that a medical career is at present very attractive. A qualified physician is almost sure of a good living and his wife enjoys social prestige. These attractions are likely to fade somewhat should the practice of medicine come under state control as is threatened all over Canada. Should this happen the selection of students will be simplified : the undesirables, however brilliant, will not apply.

The Principal of Queen's University in his annual report noted that after many years of exclusion women students have been admitted to the course of medicine. Two are in the first year and two with advanced standing are admitted to the second year. In Toronto 36 women have been given provisional registration in the first year, but many others have been rejected. Information is not available from other universities but there appears to be a definite trend towards the study of medicine by women. A Russian visitor expressed himself as amazed that the proportion of women to men in medical schools in Canada was so low. Dr. George Draper of New York spoke to the Royal College of Physicians and Surgeons a few months ago and suggested that the urge to study medicine was due to a preponderance of the gynic element in the androgynic mosaic of personality. Should that be so it is quite logical to argue that women, who must necessarily have such a type of personality, are peculiarly suited to the practice of medicine.

Letters to the Editor

IN WHICH WE MIGHT SERVE

SIR,—You lately quoted with apparent approval, as though it were self-evident truth, a paragraph from a *Times* leader to the effect that the profession cannot expect a substantial share in administering and determining the form of a national medical service because the public will be compelled to pay £30 million a year to doctors in this service. Self-evident it may seem to the *Times* but surely, Sir, it should not seem so to you.

The public pays much more than £30 million a year for its naval service; but though the First Lord is a civilian and Parliament holds the purse-strings I have always supposed that the administration of the Service was very largely in the hands of professional sailors, that the Board of Admiralty consisted mainly of admirals, and that it had powers far exceeding those of the central advisory council proposed to assist the Minister of Health. When Parliament and the public have asserted their powers, overridden professional advice, and settled for themselves the kind of naval service they would like to have, as they did in the 1920's and early 30's, the results have been unfortunate not only for the Navy but for the country, and indeed for the world. But at other times we have a Service of which we are justly proud, and in which succeeding generations of sailors are themselves proud to serve.

Our national educational service, on the other hand, is run very much as is proposed for the medical service, not by teachers but by a Ministry and local authorities. It is at least arguable that it is the most vitally important of all our services, yet I cannot remember ever to have heard a teacher, a pupil, or a citizen express pride in it, or assert, as we do of so many of our institutions, that British State education is the finest in the world.

I believe myself that a people with a clear vision of its own highest good would think long before doing anything to reduce the number of its citizens still able and willing to assume direct and undivided responsibility for the work they undertake; but, without looking so deep or so far ahead, is it not abundantly clear that if the public desires a medical service of which both they and those who serve in it can be justly proud, and in which sons will follow their fathers, they will be wise to take as their pattern not county-council schools but the Royal Navy?

Hampstead, NW3. LINDSEY W. BATTEN.

SIR,—With the greater part of your leading article of Dec. 16 I am in agreement. But you take the white-paper view that "executive powers of this kind can be vested only in elected representatives of the public." Now why? The Services for fighting the King's enemies dispose of large sums of public money which we are forced to contribute even if conscientious objectors; the executive authority is, for instance, the Air Council, a body consisting of a majority of professional airmen, and a minority of civil officials including two elected representatives, the Minister and his under-secretary. Why can't the service for the fight against disease be run the same way?

SERVING OFFICER.

*** Most certainly the medical profession should have a large share in building any new service, and an effective voice in its administration. But technical skill does not confer on its possessors the right to control services provided by the public for the public. Such services cannot be run by elected representatives of the medical profession, responsible only to the profession; for in a democracy control must ultimately rest with elected representatives of those who find the money—either locally through local authorities, centrally through Parliament, or both. Doctors must of course take part in administration of a medical service, just as admirals, generals, and air marshals take part in administering the fighting services. But in every kind of Government department the technician is employed by the Minister and acts in his name.

In the Service Ministries the technician may seem to be able to take decisions and give orders more directly than in the Ministry of Health, and there are undoubtedly differences between the Service and civilian departments in this field. But they are not as unlike each other as is often imagined. In the Ministry of Health there is now a large medical department carrying on a great deal of day-to-day work into which the administrative officers do not normally enter, while for other purposes the doctors and administrators work side by side and the administrators take responsibility for decisions affecting the Ministry's public duties. The ultimate responsibility always remains, however, with the Minister, and his chief medical officers have as free and direct access to him as his chief administrative officers. This civilian system has advantages as well as disadvantages. As voluntary hospitals have shown, doctors can achieve excellent results through lay administrators provided both parties are working towards the same end; and under the present régime doctors at the Ministry of Health seldom complain of being frustrated by their lay colleagues. It would, no doubt, be constitutionally feasible to transfer the executive posts in the Ministry to doctors, but this would not mean that the profession was controlling the service. Also it would produce fresh problems; for the Ministry would still have to deal with the Treasury and Parliament, and doctors who have to devote much attention to governmental technique are apt to lose touch with the technique of medicine. A more useful change, in our view, would be to strengthen the medical staff of the Ministry by the addition of more part-time members engaged in active practice.

Emotionally, and in other ways, there is indeed a contrast between one of HM ships and the school or hospital of some backward local authority. Dr. Batten will remember, however, that the social services are only young and poor relations of the fighting services. The public educational and medical services were established mainly to fill, inexpensively, the larger gaps left by private enterprise and charity; and if the nation, declaring war on ignorance and disease, had granted several hundred millions a year to the Ministries of Education and Health, it would probably have secured something more spectacular. These Ministries have only just begun to plan their comprehensive services for the community, whereas the Admiralty, with almost unlimited resources in time of war, has been planning a comprehensive Navy since the days of Henry VIII.

The result of naval planning is superb. But it is also an entirely centralised, strongly disciplined, authoritarian, State salaried service, paying no attention to the opinions of the people on whom it operates, since they are the King's enemies. This, surely, is precisely what we must avoid for medicine.—ED. L.

AMŒBIASIS

SIR,—In the discussion on amœbiasis at the Royal Society of Tropical Medicine and Hygiene on Nov. 16, reported in THE LANCET of Dec. 9, Dr. A. R. D. Adams of the Liverpool School of Tropical Medicine and other speakers referred to what they call the "Liverpool" method of treatment. This treatment is as follows:

> The treatment lasts 21 days. Bismuth carbonate is given daily, 1 drachm three times a day, in water.
>
> *On odd days:* 'Auremetine' capsules, gr. 3, daily; chiniofon retention enema, daily.
>
> *On even days:* Tab. 'Stovarsol' 0·25 g. b.i.d.

In 1926 Sir Philip Manson-Bahr and I conceived the idea of a combined form of treatment, and worked it out on parallel lines, quite independently of, and unknown to, each other. He used EBI by mouth and 'Yatren' ('Quinoxyl,' chiniofon) as a retention enema. My method of treatment was (and is) as follows:

> *On odd days:* one "slipule" of auremetine, gr. 1, three times daily to a total of 10 days.
>
> *On even days:* Tab. stovarsol, 0·25 g. three times a day to a total of 7 days (provided, always, that the patient does not show any intolerance to arsenic); chiniofon retention enema of one litre daily, the first two at 2½%, the last eight at 5%.

In the beginning, I used to give large doses of bismuth, either the subnitrate, as recommended by Deekes of Panama, or the oxycarbonate as practised by the Liverpool School. I have, however, of recent years given this up, as I do not think that it had much effect one way or the other.

Some time later—I think it was in the early summer of 1930—I outlined my treatment to the late Prof. Warrington Yorke (who was looking after our tropical cases at Liverpool) and I heard later he had adopted it as a standard treatment for amœbic dysentery. I think you will agree that, in essentials, the so-called "Liverpool" method differs little from the treatment used in this Ministry; and that if any name is to be attached to the treatment, it should be that of the Ministry of Pensions, in which I have had the honour to serve for many years.

Manson-Bahr and I seem to have obtained exactly similar results from the two methods of combined treatment, and I can unreservedly support his claim that, while an odd case here and there has relapsed, we have yet to meet a case that has not *responded* to the treatment, if it is given with meticulous attention to detail.

May I also correct the report of my remarks in your issue of Dec. 9? I am made to say that I had encountered numbers of intractable cases of amœbiasis. What I meant to imply was that I was encountering numbers of cases of amœbiasis which were resistant to emetine. Further, that I had tried a number of drugs to influence the concomitant bacterial infection. The only drug that I have found of any use in this connexion is penicillin. As to conessine, I mentioned, in reply to a question by Sir Harold Scott, that I had tried this alkaloid in a number of cases after the last war, but had found it to be without any effect whatever.

Queen Mary's (Roehampton) Hospital. J. GRAHAM WILLMORE.

TRANSFUSION ORGANISATION

SIR,—During the war I have had the opportunity of studying, in the Midland Region, the working of the national transfusion organisation set up by the Ministry of Health, as applied to many hospitals differing in administration and facilities. As a result I feel that more should be known of the well-regulated control maintained by the service over all transfusion fluids and equipment.

The only stable transfusion material is dried plasma. This, effectively sealed, can be stored indefinitely within normal extremes of temperature. In the case of blood, experience shows a maximum life of 14 days to be desirable. Correctly maintained storage conditions are imperative. A small refrigerator should be reserved specifically for blood storage. It is not sufficient to check the temperature from time to time, for variations are frequent. Refrigerators are therefore supplied with a maximum and minimum thermometer which is read and noted at each delivery and collection. At the same time a record of the numbers and condition of all unused blood is made; valuable information is thus afforded to both user and supplier. Permissible temperature variation is + 2° C to + 7° C. Outside this range a raised reaction rate is often encountered, particularly in winter with refrigerators in exposed sites. Sometimes heat is required to prevent temporary freezing, resulting in hæmolysis of the blood.

Liquid plasma, in general use in the early days of the Ministry of Health's service, suffers from major disadvantages, the principal being the inevitable deterioration with storage. Changes like formation of clots and development of granularity are greatly accelerated by low and variable temperatures. An ever-present danger is the chance of infection, also occurring with bottles of distilled water used for dried plasma reconstitution. Careful inspection of all bottles monthly against a strong light is the only satisfactory safeguard. It is dangerous to attempt to differentiate visibly between "granular"-sterile and infected plasma; crystal clarity of both liquid plasma and distilled water is the criterion for use.

A routine for transfusion of blood at these hospitals has been established. Grouping of the patient is carried out, using a macroscopic technique with serum of high titre supplied by the central laboratory. The officer responsible then withdraws the appropriate bottle of blood from the bank and observes that the plasma-cell junction is clearly demarcated and that there is no trace of hæmolysis. Under no circumstances should blood be transfused if it shows haziness or an ill-defined layer. Some bacteria may proliferate even at 4° C, but fortunately hæmolysis is always concomitant; it is therefore essential that a competent person should examine the blood while it is undisturbed in the bank. The common practice of sending a nurse or student for a bottle of blood cannot be too strongly condemned. A cross-agglutination test of donor's cells with patient's serum must routinely be performed with macroscopic examination after 10 minutes at room temperature. Blood and plasma should be warmed to 37° C. before administration—serious consequences have often resulted from over-heating. Partly used bottles must never be retained for later use.

There has been much uncertainty as to the exact potentialities of blood and plasma. The danger of overloading should at all times be stressed. In cases where transfusion is necessary the amount should be judged from the patient's general condition and blood-pressure, and the hæmatological and biochemical estimations, and its effect should similarly be assessed.

Careful records of all transfusion data may reveal weak features in technique both at the hospital and the central laboratory. The principal causes of reactions appear to be giving blood too quickly, and "pyrogens." A useful rate, other than for massive hæmorrhage, is 40 drops per minute, particularly where universal blood is being employed. It is unwise for hospitals to re-sterilise transfusion equipment; reactions have often been due to this.

Regular contact with the officers of the service enables the hospital transfusion officer to obtain advice on technique and procedure and discuss advances in transfusion work. In this way the full implications of the Rh factor have been impressed on transfusion officers and arrangements made for typing and securing Rh-negative blood on special demand from the central station. Investigational and follow-up work on jaundice reactions is also a recent result of this liaison.

My experience brings out two prime needs—that at all hospitals a particular officer must be responsible for transfusion arrangements; and that where possible transfusions should be planned procedures.

Birmingham. HAROLD THWAITE.

MALIGNANT MELANOMA

SIR,—When I saw the gruesome illustrations and alarming title of Miss Tod's paper I knew that we had to expect anxious inquiries from patients with moles on their skin. The paper attracted the attention of several popular newspapers sufficiently for them to publish warnings of the dangers foretold from these blemishes, and it is regrettable that at least equal publicity was not given to the just and commendable criticism by J. E. M. Wigley and R. T. Brain (Nov. 25) which contains evidence that is less inaccurate and certainly more desirable for the public.

Miss Tod's paper attracted attention with the news that a common blemish could by a common treatment be converted into a malignant condition, horrible in appearance and outlook; yet it did not make any real contribution to its successful treatment. Though moles are very common, and malignant melanoma very uncommon, the latter do not all originate in pigmented moles. The primary focus of malignant melanoma may originate at a site without a pre-existing mole; it may not show the pigment; it may be related by the patient to a small wound; and its appearance may not disturb the patient or suggest to the surgeon the grave lesion which calls for drastic surgery. The first indication of its gravity may be the appearance, in the subcutaneous tissues some distance from the primary focus, of one or more small dark spots which may resemble tattoo spots in their seemingly harmless character; for there may be no elevation of the skin over them, and no sign of reaction in the tissues around. Yet even at this stage radium or X-radiation appears to be useless, even when it is pushed to or beyond the limits of skin tolerance, and surgery of the boldest does not appear to be any more successful. I have seen cases in which X-radiation has been the main cause of pain and distress. On the other hand, pigmented moles may exhibit very ugly and suspicious appearances, may have shown evidence of much recent growth, and may have histological features which suggest malignancy, but may yet be cured by local surgical excision.

Even the suggestion that trauma can convert a pigmented mole into a malignant melanoma has not been established. A common site for moles is the beard area:

here they may be repeatedly and frequently cut with the razor over a period of 40 or more years without producing a malignant melanoma.

When our cancer "experts" can tell us of a cure let them emblazon the cancer with all the horrors imaginable to cause the afflicted to seek the cure; but until then let us avoid publicity, which though it contributes nothing, adds alarm where apprehension already exists.

Edgbaston, Birmingham. JAMES F. BRAILSFORD.

SIR,—Miss Margaret Tod's article was strongly criticised by Dr. Wigley and Dr. Brain. Apart from the statistical and sociological considerations there are two points on which I would like to disagree with the critics.

They do not admit that irradiation offers a useful alternative to surgery, accepting the generally held view that malignant melanomata are not radiosensitive. There is no doubt that many, perhaps a majority, are radiosensitive. In 1937 I developed this thesis in a paper subsequently published in the *British Journal of Radiology* (1939, 12, 327). In the literature there are many cases of undoubted radiosensitivity of such tumours. After three years' radiotherapy I was convinced in 1933 that the generalisation was incorrect because I had seen complete disappearance of malignant melanoma after radiation. In trying to analyse the causes of failure I came to the conclusion that inefficient removal and inefficient radiation could both be associated with subsequent invasion by the neoplasm, along the well-known routes and especially in the skin. Infection and interference with nutrition of even small groups of cells may be factors of very great importance.

Miss Tod's figures show the danger to the patient of inadequate treatment in the first instance, and also show that radiation can be effective.

Whether the malignancy of such tumours can be the result of injury or injudicious treatment is a question which can never be settled, but "a simple excision or one or two applications of carbon-dioxide snow," although not carcinogenic factors, are dangerous in some cases, the malignancy of which may have been unrecognised, and even unrecognisable, without histological examination. From my own experience I can say that less radical surgery is safe if combined with radiation, and also that even fixed inoperable lymph-glands can be successfully treated in some cases by radiation.

I am of the opinion also that overdosage of malignant melanoma such as will produce marked skin changes is in some instances the cause of failure to treats successfully by radiation.

Radiotherapy Dept., London Hospital, E1. FRANK ELLIS.

PLACE OF IODINE IN THYROID MEDICATION

SIR,—The Goitre Subcommittee of the Medical Research Council have summarised the evidence in favour of giving iodine to prevent the type of goitre associated with iodine deficiency, and have urged the adoption of a national policy of iodisation of all common salt for the prevention of simple goitre (*Lancet*, 1944, i, 107). The consensus of medical opinion is against the continued use of iodine in therapeutic dosage once the thyroid has become enlarged, because it hardens the gland; but information is conflicting about the possible therapeutic value of smaller doses over a considerable period.

To obtain information on this point, an investigation was made in two factories (A and B) employing women recruited from the same area. The factories were adjacent but separate; they were under the same medical supervision; and the age-incidence of the employees was similar. The iodine content of the drinking waters used by these women is low and lies between 2·5 and 3·2 μg. per litre.

The incidence of thyroid enlargement among 1276 women examined was:

Factory	Number examined	Number with enlarged thyroid	Case-rate %
A	800	86	10·8
B	476	33	6·9
Total ..	1276	119	9·3

In factory A 83 women, and in factory B 33 women, were enrolled in the experiment as treated and control groups respectively. The women under treatment (factory A) received twice weekly one tablet containing ¼ grain of potassium iodide. The tablets were distributed by the welfare supervisor directly to each worker. There was a transfer of women labour to factories in other parts of the country but at the end of six months (February to August, 1944), 46 remained in the treated group and 29 in the untreated. The alterations in the size of the thyroid during the experimental period were:

Factory	Increase	No increase	Decrease	Total
A (treated) ..	21	7	18	46
B (control) ..	15	7	7	29

The appropriate statistical list was kindly made by Mr. W. T. Russell, D SC, to ascertain if the two distributions were different, and it was found that the value of χ^2 was 2·19 and P = 0·36, which indicates that the progress of the disease among women in the two groups was not dissimilar.

The results of this experiment suggest that the place of iodine in thyroid medication is prophylactic, before the thyroid gland enlarges, in areas where the iodine content of the water-supply is known to be low and goitre occurs. They also bear out the view that the amount of potassium iodide given has no adverse effects, and hence indicate that the use of iodised salt as recommended by the Goitre Subcommittee could have no adverse effects either.

Gloucester Aircraft Factory. R. WILSON CAREY, Medical Officer.

DECISIONS IN WAR-TIME

SIR,—In the debate on the Address, reported in your last issue, the Deputy Prime Minister deprecated the holding at the present time of the election of 39 members of the General Medical Council, 7 of whom only are elected by medical practitioners, on the grounds that "the medical electorate numbers somewhere about 65,000. The strain on the medical profession at the present time is immense. The fact is that people do not know where a large proportion of those 65,000 members are. A large proportion of them is overseas. A great many of the other doctors have been moved about the country according to the exigencies of war." Dr. Russell Thomas very usefully directed the attention of the House to the Deputy Prime Minister's argument against present changes affecting doctors and declared that "the rt. hon. gentleman on behalf of the Government has made it perfectly clear that the medical profession cannot be expected to come to any decision on any matter at the present time." The election of 7 members of the General Medical Council is surely a less important matter than the decision of the conditions of future medical practice in this country. I submit, Sir, that the Deputy Prime Minister has shown a more realistic appreciation of the facts as they are than the Prime Minister and the Government, who propose to introduce legislation revolutionising medical practice in defiance of the clear undertaking given by the Prime Minister himself in the House on Oct. 13, 1943, in the following explicit terms:—

> "There is no question of far-reaching changes of a controversial character being made by the present Government unless they are proved indispensable to the war. Another Government might take a different view, but not this one. . . . I certainly could not take the responsibility of making far-reaching controversial changes which I am not convinced are directly needed for the war effort, without a Parliament refreshed by contact with the electorate."

House of Commons. E. GRAHAM-LITTLE.

SMALLPOX AND VACCINATION

SIR,—I should like to reply on behalf of Major Illingworth and myself to the criticisms levelled at our paper (Nov. 25) by Dr. J. P. Marsden.

The paper was not written for experts; neither of us can claim experience in any way approaching that of Dr. Marsden. It was written for the benefit of the many RAMC medical officers who may run up against

smallpox in some out-of-the-way part of the world where such classics as Ricketts's *Diagnosis of Smallpox* are not available and the only book of reference may be an infectious disease section of some textbook of general medicine. We described 100 cases as we saw them; we agree that many of our points of difficulty would have been resolved had Ricketts's book been available.

In our experience several of the modified cases were in fact clinically indistinguishable from chicken-pox throughout their course. Not having seen 14,000 nor even 1000 cases we had no option but to resort to laboratory confirmation which enabled us to make a correct diagnosis at an early stage of the infection: this is made quite clear later in the paper.

We admit that our use of the word "successful" with reference to the vaccination state was misleading. As Dr. Marsden suggests, the reaction of immunity was taken as evidence of protection among Service personnel at the time this paper was written some 7 months ago. The difficulty of assessing these reactions and the consequent unreliability of vaccination records based on them have been fully realised and have been stressed in our paper. To refer to the vaccination records of 100 cases as "vaccination statistics" is surely an overstatement. We do not wish in any way to assail the protective value of "successful vaccination" as defined by Dr. Marsden. We have merely stated facts from which we were hardly in a position at that time to draw the inference.

Lincoln. W. A. OLIVER.

HOSPITAL PHYSICISTS AFTER THE WAR

SIR,—The attention of bodies responsible for radiological appointments has, on a former occasion, been drawn to the need to ensure that men serving with HM Forces do not stand at any disadvantage as compared with their colleagues at home.

We are now requested to draw attention to the position of physicists at present serving with HM Forces who may soon be returning to civilian life, and some of whom may very well, we trust, become interested in the possibilities of hospital physics as a career.

During the war a number of hospital physicist appointments have been made from among men who, for various reasons, have been directed to work in civilian hospitals, and who have thereby become experienced in the work and have acquired the "hospital outlook" which is so essential for proper coöperation with the radiologist. It would obviously be unfair, if, by comparison, the man who has been serving with HM Forces stood at any disadvantage, and we have reason to believe that the hospital physicists concerned are themselves anxious that this should not be the case.

It is therefore urged that hospital and radiological authorities should do everything possible to help the "return to normal" of physicists now in the Services, and to ensure that war service and lack of special experience is not a handicap in applications for physicist posts. In our opinion his probability of appointment should at least correspond to that which a physicist might have expected if he had remained at home, and not joined the Services, and if necessary allowances should be made for him to undertake concentrated training necessary to bring his knowledge up to date and standard.

The importance of the physicist in radiological departments is now generally recognised—not least by the radiologist—and it is felt that some acknowledgement of this can be made by radiological bodies in attempting to secure a fair deal for their physicist colleagues who have been on Service.

L. H. GRAY HUGH DAVIES
Hon. Secretaries, British Institute of Radiology.

London, WC2. J. F. BROMLEY
Hon. Secretary, Faculty of Radiologists.

SUPPLY OF ANTIMALARIAL DRUGS TO INDIA.—In the House of Commons Mr. AMERY said that 491¼ million tablets of synthetic antimalarial drugs were shipped to India in 1943. The shipments in 1944 to date total 632¼ million tablets, in addition to 1000 lb. of totaquina. Quinine stocks in India in April, 1944, were 244,000 lb. Indian pre-war production of quinine was 90,000 lb. a year and is increasing. Pre-war consumption of quinine was about 200,000 lb. a year and of synthetic antimalarial drugs negligible.

On Active Service

AWARDS

CB

Brigadier R. W. GALLOWAY, CBE, DSO, MB, late RAMC

CBE

Colonel J. B. S. GUY, OBE, MB, RAMC

DSO

Lieut.-Colonel P. J. RICHARDS, OBE, RAMC

OBE

Colonel GEOFFREY ANDERTON, MB, RAMC
Lieut.-Colonel F. H. BENTLEY, FRCS, RAMC
Lieut.-Colonel H. D. CHALKE, RAMC
Colonel W. J. F. CRAIG, MB, RAMC
Colonel J. C. GILROY, MRCP, RAMC
Lieut.-Colonel F. G. HOLMAN, RAMC
Lieut.-Colonel J. G. JAMIESON, RAMC
Major F. R. LANGMAID, RAMC
Lieut.-Colonel DANIEL MCVICKER, MC, FRCSE, RAMC
Lieut.-Colonel G. B. MITCHELL-HEGGS, FRCP, RAMC
Lieut.-Colonel A. J. PITKEATHLEY, MB, RAMC
Lieut.-Colonel J. K. SLATER, FRCP, RAMC
Lieut.-Colonel D. T. SWIFT, RAMC

MBE

Major H. J. BELL, MB, RAMC
Captain A. P. R. BORROWMAN, MB, RAMC
Major H. W. BURGE, FRCS, RAMC
Major J. M. P. CLARK, FRCS, RAMC
Major G. J. CUNNINGHAM, MD, RAMC
Major WILLIAM DAVIDSON, RAMC
Major D. J. DAVIES, RAMC
Major F. C. HEATLEY, MB, RAMC
Captain M. C. H. KINGDOM, MB, RAMC
Major J. N. MACARTNEY, MB, RAMC
Major I. A. MACDOUGALL, RAMC
Captain M. G. PENDHARKER, IAMC
Major W. L. OGLE, MB, RAMC
Major AARON ORLEK, FRCS, RAMC
Captain F. E. PITT-PAYNE, RAMC
Lieut.-Colonel C. D. PRESTON, MB, RAMC
Captain R. H. R. RENWICK, MB, RAMC
Major J. A. ROSS, FRCSE, RAMC
Major R. A. TENNENT, MB RAMC
Major R. J. TOLEMAN, MB, RAMC
Major B. MCN. TRUSCOTT, FRCS, RAMC
Major R. I. WILSON, MB, RAMC

MC

Major R. A. HOOPER, RAMC
Captain JACKSON BRAHAM, MB, RAMC
Captain E. M. GLASER, RAMC
Captain O. D. MORRIS, RAMC
Captain L. G. MORRISON, MB, RAMC
Captain D. F. O'NEILL, MB, RAMC
Major F. J. G. SLATER, RAMC
Captain T. G. CAMERON, RAMC
Captain J. T. A. LLOYD, RAMC
Captain A. N. MACPHAIL, RAMC
Captain H. D. MOORE, RAMC
Captain J. A. PERPOLI, RAMC
Captain R. D. BARRON, RCAMC
Captain E. E. MILLER, MM, RCAMC
Captain W. F. MACKENZIE, RCAMC

MENTION IN DESPATCHES

Surgeon Lieutenant H. R. GRAY, MB, RNVR

MEMOIR

Captain F. A. S. AUSTEN, who died in hospital in India on Nov. 5, was born at Worthing in 1909 and was educated at Haileybury College. He qualified at the Middlesex Hospital medical school in 1939, and acted for a year as assistant medical officer at the Mayday Hospital, Croydon, till he joined the RAMC in 1940. After some months in England as medical officer of an antitank regiment he was drafted with British troops to India in 1941. He saw service both in the field and in base hospitals and his commanding officer speaks of him as a most conscientious doctor and officer, cheerful and popular with all. Captain Austen was keenly interested in the Boy Scouts and other youth movements.

Notes and News

MANSON OF TROPICAL MEDICINE

Sir PATRICK MANSON was born a hundred years ago, and a meeting to celebrate that important event was held on Dec. 14 at Manson House, the home of the Royal Society of Tropical Medicine in Portland Place. His famous diary, in which he recorded in great detail all his main discoveries from 1873 onwards, was on view, with the diary which he kept in Formosa in 1866. Portraits of him at various stages of his romantic career gave spirit to a little collection of exhibits of interest to tropical experts—his drawings of the development of filaria in the mosquito, the actual slides showing development of filaria in mosquitoes sent to Cobbold in 1877, and the slides of malaria-infected anopheles sent to Manson himself by Ross.

Sir Philip Manson-Bahr, in an address, told of his father-in-law's birth on Oct. 3, 1844, at the small town of Old Meldrum, near Aberdeen. His father, John Manson, was a man of substance, owner of two farms and manager of the local linen bank. His mother, Elizabeth Livingstone Blackie, a woman of character, was related to the famous explorer. Young Patrick, the second son, spent his boyhood fishing for eels, tickling trout, shooting partridges and playing cricket. At 16, it is said, he went out one day with 40 cartridges and returned with 39 birds and one unspent cartridge. On another occasion, more in keeping with his later interests, he shot a cat on the roof of the neighbouring manse, and extracted from it a tapeworm which he studied assiduously. When he was 15 he was apprenticed to the firm of Blackie Bros., iron-founders in Aberdeen; but he developed curvature of the spine, and with it that tremor of the right arm which many remember as characteristic of him. While he was lying on his back, recovering from this condition, he decided to take up medicine, and with typical energy qualified while still below the statutory age, in 1865.

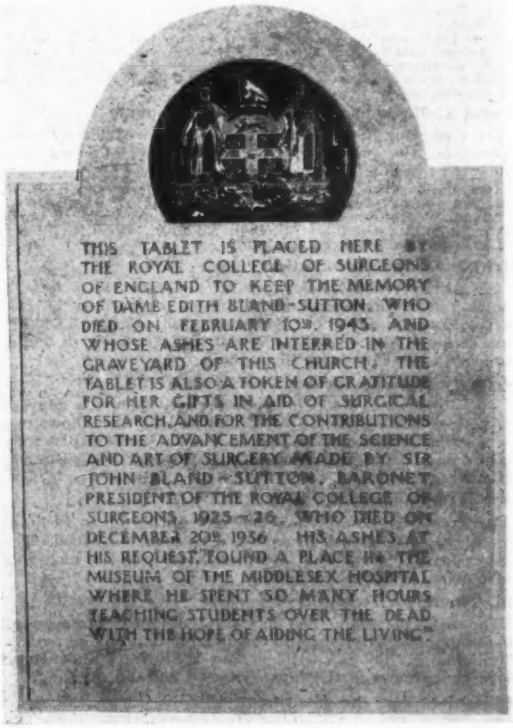
Next year he went to Formosa, where he was port medical officer for 4 years, earning enough to repay his father the cost of his education. He learned to know the head-hunters of the interior, and to speak their language. After a few more years spent at Amoy, a treaty port on the mainland, he returned to Scotland in 1875, and married. Stirred by Lewis's work on filaria in Calcutta, he returned to Amoy with his wife and a microscope, and by 1877 had discovered the nocturnal periodicity of filaria. Of his two Chinese assistants, the one who worked at night always found the parasite. "It is the discrepancy which teaches, if you would learn," Manson said. In 1878 he demonstrated the life-history of the filaria in the mosquito, news of which he sent in a modest letter, accompanied by specimens, to Cobbold in London. His study of parasites from that time progressed rapidly. He found *Paragonimus westermanii* in the sputum of a Chinese mandarin, and his discovery of the part played by *Melania libertina* was afterwards confirmed by Nakagawa in 1911. In 1883 he was appointed dean of the Hong-Kong medical school, which he helped to found. Among his first pupils there was Dr. Sun-Yat-Sen, whose life, when the Chinese embassy kidnapped him later in London, Manson and Sir James Cantlie were together able to save.

In 1890 he went home to Aberdeenshire, but in the following year, owing to a fall in the value of the Chinese dollar, he returned to practise, this time in London, where he formed the nucleus of what was to become the London School of Tropical Medicine. His studies of filaria grew and prospered. In 1894, arguing by analogy from what he had observed in filaria, he formulated his mosquito-malaria theory, and acquired the nickname of Mosquito Manson among his colleagues. Ronald Ross, then a major in the Indian Medical Service, got into touch with him, and in a famous correspondence of 58 letters (which Ross thought "as noble a series as ever a man received") the malaria problem was thrashed out. In an experiment designed to convince the British Government, Manson arranged for anopheles infected with benign tertian to convey the parasite to his eldest son by their bites. Patrick Thurburn Manson, then a medical student at Guy's, duly developed the disease.

The London School of Hygiene and Tropical Medicine was opened under Manson's direction in 1899; he retired in 1912 and died in 1922, after some happy years spent mainly in fishing in Ireland. But he was happy in everything he did, absorbedly happy in his work, his sports, in gardening and books—"a great simple soul," as Sir Philip Manson-Bahr called him.

MEMORIAL TO THE BLAND-SUTTONS

THE tablet here illustrated is to be erected by the Royal College of Surgeons of England in the parish church of Ringwould, Kent, which Sir John and Lady Bland-Sutton regularly attended when living at Kingsdown, near Deal. The design is by Mr. Alner W. Hall, FRIBA.


THIS TABLET IS PLACED HERE BY THE ROYAL COLLEGE OF SURGEONS OF ENGLAND TO KEEP THE MEMORY OF DAME EDITH BLAND-SUTTON, WHO DIED ON FEBRUARY 10TH, 1945, AND WHOSE ASHES ARE INTERRED IN THE GRAVEYARD OF THIS CHURCH. THE TABLET IS ALSO A TOKEN OF GRATITUDE FOR HER GIFTS IN AID OF SURGICAL RESEARCH, AND FOR THE CONTRIBUTIONS TO THE ADVANCEMENT OF THE SCIENCE AND ART OF SURGERY MADE BY SIR JOHN BLAND-SUTTON, BARONET, PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS, 1925–26, WHO DIED ON DECEMBER 20TH, 1936. HIS ASHES, AT HIS REQUEST, FOUND A PLACE IN THE MUSEUM OF THE MIDDLESEX HOSPITAL WHERE HE SPENT SO MANY HOURS TEACHING STUDENTS OVER THE DEAD WITH THE HOPE OF AIDING THE LIVING."

A HUNDRED YEARS OF BOOKS

IN his early years of training every medical student in London makes the acquaintance of Messrs. H. K. Lewis's, at the corner of Gower Street; and the friendship usually lasts for life. At one time the welcoming shop was little and dark, like the shop of "wool and water"; of late years it has seemed to grow lighter and larger, but the same odd charm still hangs about it, perhaps entrapped in the characteristic and unforgettable smell of new bindings and printer's ink. Henry King Lewis started in business on his own account towards the end of 1844, in the small shop then known as 15 Gower Street North. He left an organisation on which the whole British medical profession relies. "I should write to Lewis's," we say, when a friend asks for information about a journal or book; "they'll know." Their patience is endless, and their lending library an inexhaustible bran-pie for threadbare student and busy consultant alike. The pleasures of the stationery department, though curtailed at present by paper restriction, can still seduce the busy doctor into loitering, fingering, and planning vast schemes of perfect record-keeping.

Lewis's have lent many of their trained men to the Services—36 are now serving. Those left behind have had to stretch diminishing stock to meet a great increase—not yet explained—in the demand for medical, scientific, and technical books. On their success in this impossible task, as well as on their centenary, the profession will wish to congratulate them.

Society of Medical Officers of Health

A meeting of the fever hospital medical service group will be held at the London School of Hygiene, Keppel Street, WC1, on Friday, Jan. 12, at 3 PM, when Mr. P. G. Shute of the Ministry of Health malaria laboratory will open a discussion on malaria in this country.

University of Liverpool

At recent examinations the following were successful:

MD—W. I. D. Scott.

FINAL EXAMINATION FOR MB, CH B

Edith M. Brown and D. A. Gregson (with second-class honours).

Part III.—M. K. Alexander, J. T. D. Allen, E. T. Anderton, H. B. Andrews, E. H. Annels, J. P. D. Bates, T. J. Boag, E. Cooper, D. Craddock, H. T. Davenport, K. R. Dumbell, E. D. Edmondson, J. L. Edmondson, I. J. C. Frew, A. Griffith, J. E. Hall, D. A. Harbord, C. R. Helsby, G. Hughes, L. Jacobs, E. S. Jones, H. A. Jones, R. S. Jones, W. T. W. Lawson, S. Lipton, J. B. Lynch, K. McCarthy, M. G. McEntegart, R. H. Martlew, Lucille F. Morgan, D. B. Mossman, C. M. Ogilvie, C. A. Pearson, H. H. Pilling, W. L. Sanders, Isabel S. Smellie, G. W. Storey, P. J. Taylor, W. A. Thompson, and R. D. B. Williams.

Royal College of Surgeons of Edinburgh

At a meeting of the college on Dec. 19, with Prof. R. W. Johnstone, the president, in the chair, the following were admitted to the fellowship:

R. S. Barclay, MD GLASG., Marjorie R. E. Boyd, MD DUBL, R. B. W. Cole, MB DURH., Leonard Goodman, MRCS, S. W. G. Hargrove, MB CAMB., L. W. Hefferman, MRCS, Mary K. Lawlor, MRCS, F. J. Lorriman, MD DURH., Gardiner Mitchell, MB BIRM., D. R. K. Reid, MB ST. AND., and Paul Steiner, MRCS.

British Dental Association

Sir Alfred Webb-Johnson, FRCS, will open the inaugural meeting of the industrial dental officers' division at 13, Hill Street, London, W1, on Saturday, Jan. 13, at 2.30 PM. Speakers will include Dr. R. V. Bradlaw, professor of dental surgery in the University of Durham.

Priority Rations for Invalids

The Ministry of Food is sending every doctor a copy of its new booklet, MED 2, on special rations and allowances for invalids and people on special diets. Extra copies may be obtained from the Ministry's Welfare (Foods) Branch, Mount Stewart Hotel, Colwyn Bay.

Dried Bananas for Adults

Patients with steatorrhœa can now obtain up to 14 lb. of dried bananas a month by applying to their local food office and presenting proof that steatorrhœa is present, including an analysis of the stools for fat.

St. Thomas's Hospital

The medical school has left its temporary premises at Godalming and will reopen in the London building on Jan. 9. The linked St. Thomas's Hospital at Hydestile will continue to cater for most of the inpatient clerking and dressing.

Hygienists for the Continent

The Civil Affairs branch of the Army is asking for the services of a number of medical officers of health to act as hygienists in liberated areas.

Society of Thoracic Surgeons of Great Britain and Ireland

The society will meet in London on Thursday and Friday, Jan. 25 and 26. At 2 PM, on Jan. 25, at 1, Wimpole Street, W1, there will be discussions on constrictive pericarditis, and foreign bodies in the air-passages, and at 10 AM, on Jan. 26, at 26, Portland Place, W1, a discussion on treatment of carcinoma of the bronchus.

The Place of Science in Industry

The British Association, through its division for the social and international relations of science, is arranging a conference on this subject, to be held at the Royal Institution, Albemarle Street, London W1, on Friday and Saturday, Jan. 12 and 13. There will be discussions on what industry owes to science, on fundamental research in relation to industry, on industrial research and development, and on what science might accomplish in the future. The speakers will include Prof. E. C. Dodds, FRCP, FRS, Prof. J. M. Mackintosh, FRCP, Sir Richard Gregory, FRS, Mr. A. L. Bacharach, Sir Joseph Barcroft, FRS.

Association of Voluntary Teaching Hospitals of Great Britain

A meeting of nominated representatives of the undergraduate teaching hospitals was held at the Westminster Hospital on Dec. 7. The 46 present included Dr. H. E. A. Boldero, Dr. W. Russell Brain, Dr. E. ff. Creed, Mr. W. D. Doherty, Dr. F. G. Hobson, Dr. Hugh Gordon, Prof. T. B. Johnston, Mr. G. H. Macnab, Dr. E. F. Scowen, Dr. G. Cochrane Shanks, Mr. Fauset Welsh, and Mr. J. M. Wyatt. The chairman of the association is Mr. J. E. Humphery, chairman of Guy's Hospital, and Mr. B. Lees Read (Guy's Hospital) and Mr. F. J. Cable (Manchester Royal Infirmary) have been nominated as secretaries.

INFECTIOUS DISEASE IN ENGLAND AND WALES

WEEK ENDED DEC. 16

Notifications.—The following cases of infectious disease were notified during the week: smallpox, 1 scarlet fever, 1990; whooping-cough, 1343; diphtheria, 463; paratyphoid, 5; typhoid, 7; measles (excluding rubella), 8985; pneumonia (primary or influenzal), 725; puerperal pyrexia, 123; cerebrospinal fever, 37; poliomyelitis, 5; polio-encephalitis, 0; encephalitis lethargica, 1; dysentery, 201; ophthalmia neonatorum, 76. No case of cholera, plague, or typhus was notified during the week.

The number of service and civilian sick in the Infectious Hospitals of the London County Council on Dec. 13 was 870. During the previous week the following cases were admitted: scarlet fever, 52; diphtheria, 22; measles, 43; whooping-cough, 19.

Deaths.—In 126 great towns there were no deaths from enteric fever, 7 (0) from measles, 2 (0) from scarlet fever, 3 (0) from whooping-cough, 7 (0) from diphtheria, 32 (4) from diarrhœa and enteritis under two years, and 21 (1) from influenza. The figures in parentheses are those for London itself.

The number of stillbirths notified during the week was 224 (corresponding to a rate of 32 per thousand total births), including 13 in London.

WEEK ENDED DEC. 23

Notifications.—The following cases of infectious disease were notified during the week: smallpox, 0; scarlet fever, 1906; whooping-cough, 1317; diphtheria, 456; paratyphoid, 0; typhoid, 2; measles (excluding rubella), 8433; pneumonia (primary or influenzal), 715; puerperal pyrexia, 130; cerebrospinal fever, 33; poliomyelitis, 5; polio-encephalitis, 0; encephalitis lethargica, 1; dysentery, 173; ophthalmia neonatorum, 53. No case of cholera, plague, or typhus fever was notified during the week.

The number of service and civilian sick in the Infectious Hospitals of the London County Council on Dec. 20 was 903. During the previous week the following cases were admitted: scarlet fever, 50; diphtheria, 30; measles, 61; whooping-cough, 14.

Deaths.—In 126 great towns there were no deaths from enteric fever, 13 (0) from measles, 3 (1) from scarlet fever, 10 (0) from whooping-cough, 5 (0) from diphtheria, 52 (3) from diarrhœa and enteritis under two years, and 28 (4) from influenza. The figures in parentheses are those for London itself.

The number of stillbirths notified during the week was 202 (corresponding to a rate of 29 per thousand total births), including 20 in London.

Births, Marriages, and Deaths

BIRTHS

BLAXTER.—On Dec. 23, in London, the wife of Lieutenant P. L. Blaxter, RAMC—a daughter.

BONEY.—On Dec. 28, in London, the wife of Lieut.-Colonel T. Knowles Boney, RAMC—a son.

HAMILTON.—On Dec. 28, at Glasgow, the wife of Dr. John Hamilton, Colonial Medical Service, Nigeria—a son.

HYLTON.—On Nov. 14, at Ahmednagar, India, Dr. Lorna Hylton (née Petersen), wife of Major W. H. Hylton, RAMC—a daughter.

MARRIAGES

HENDERSON—HART.—On Dec. 14, in London, John Anthony Henderson, surgeon lieutenant RNVR, to Barbara Joan Hart.

LOGAN—HOWELL.—On Nov. 22, at Liverpool, Robert Francis Leslie Logan, MB, MO to Netherlands ministry of shipping, to Betty Eugenie Howell, VAD, RN.

TOWNSEND—STONE.—On Dec. 28, in London, Wilfred Henry Townsend, surgeon lieutenant RNVR, to Elizabeth Patricia Stone.

DEATHS

AYTOUN.—On Dec. 23, at Bridgwater, John Henry Aytoun, MD EDIN., formerly of Broadstairs and Lasswade.

GRELLIER.—On Dec. 6, in India, Ernest Franz Waldemar Grellier, MB CAMB., lieutenant-colonel RAMC.

KELYNACK.—On Dec. 23, Theophilus Nicholas Kelynack, MD MANC., MRCP, JP, of Harpenden, aged 78.

MATHEWSON.—On Dec. 27, at Keswick, John Mathewson, MA, MD EDIN.

NEVILLE.—On Dec. 25, Leigh Neville, LRCP.

SIMPSON.—On Dec. 26, in London, George Augustus Garry Simpson, MRCS.

WALTERS.—On Dec. 24, Charles Ferrier Walters, FRCS, aged 69.

WILMOT.—On Nov. 24, Reginald Cameron Wilmot, MRCS, colonel late RAMC, aged 67.

AT 5 PM on Monday, Jan. 8, at 11, Chandos Street, W1, there will be a pathological meeting of the Medical Society of London.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export.

Tranquil Arrival

● The prompt cry of the newborn is a welcome sound in the delivery room. Equally satisfying to the obstetrician is knowledge that labour has progressed normally and that memory of its disagreeable features has been erased from the mind of the mother.

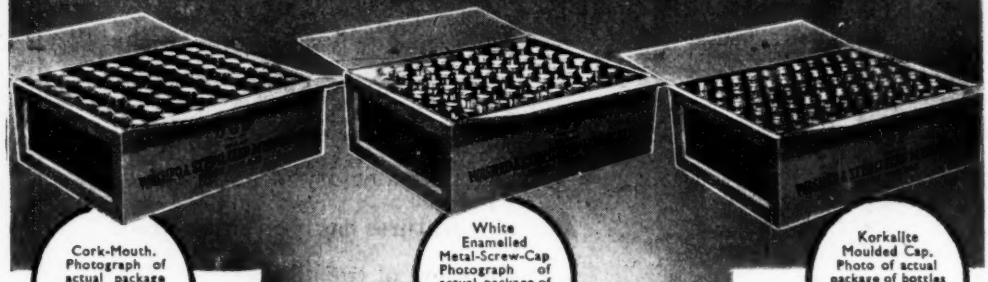
'Seconal' brand sodium propyl-methyl-carbinyl allyl barbiturate produces amnesia in a high percentage of patients in labour without contributing to the problem of infant resuscitation. 'Seconal' may be administered orally or the capsule may be punctured and inserted into the rectum.

ELI LILLY AND COMPANY LIMITED
BASINGSTOKE and LONDON

GREATER THAN EVER IS THE DEMAND FOR

U.G.B

MEDICAL BOTTLES



Cork-Mouth. Photograph of actual package of Cork-mouth bottles with cover removed

White Enamelled Metal-Screw-Cap Photograph of actual package of screw-cap bottles with the cover removed

Korkalite Moulded Cap. Photo of actual package of bottles with Korkalite Moulded Caps

WASHED AND STERILIZED
— READY FOR USE —
THE IDEAL
DISPENSING BOTTLE
IN ANY EMERGENCY

UNITED GLASS BOTTLE
MANUFACTURERS LTD
The Largest Manufacturers of Glass Bottles in Europe

8 LEICESTER STREET, W.C.2
Telephone: GERard 8611 (10 lines)
Telegrams: Unglaboman, Lesquare, London

Talk of Enzymes Think of Benger's

Liquor Pancreaticus. Liquor Pepticus. Rennet for Cheese Making. Rennet for Industrial Purposes. (Alcohol Glycerol Extract of Rennet for Whey Feeding of Infants.) Special Junket Powders. Extomak (Desiccated Hog Stomach) Benecol (Mammalian Intestinal Extract in capsule form). Pancreatin Capsules. Pancreatin for Industrial Use. Pepsin. Benger's Food.

BENGER'S LIMITED
HOLMES CHAPEL, CHESHIRE

"Gospel of fatness"

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

"A well-regulated diet serves to prevent over-fatigue. In all cases of 'nerves', fat seems to be one of the most important nutritive constituents of the food. With the war-time restricted diet, the preaching of a 'gospel of fatness' may seem unintelligent, but, after all, you can buy more fat fish, herrings, cod, etc., these days—*and you can purchase cod liver oil.*"

The doctor who gave that easily-followed advice in a recent newspaper article has helped to lighten the inevitable load on medical and health services this winter. The public will have no difficulty in obtaining SevenSeaS in liquid form.

That many people already appreciate the nutritive value of cod liver oil is proved by the increasing demand for SevenSeaS and the response to the Ministry of Food's free distribution. But many still regard it as medicine, rather than as food. It is they whom we hope to help to better health this winter by preaching this same 'gospel of fatness' in our advertising.

We hope that our efforts may result in your having fewer 'vaguely ill' patients, and so more time to attend to those who badly need your help.

STANDARD OIL: Vitamin A 20,000 I.U.; Vitamin D 2,500 I.U. per ounce. CONCENTRATED: Vitamin A 60,000 I.U.; Vitamin D 6,000 I.U. per ounce.

Issued by

BRITISH COD LIVER OIL PRODUCERS (HULL) LTD.
ST. ANDREW'S DOCK, HULL

Makers of

SevenSeaS

Anodyne influence through peripheral action

BENGUÉ'S BALSAM

When muscular aches and pains must be relieved, as in lumbago, chronic rheumatoid conditions and influenza, Bengué's Balsam provides effective salicylate medication free from the gastric upset which so often follows when salicylates are given orally.

Bengué's Balsam produces active local hyperemia of value in overcoming congestion as in cases of pleurisy and influenza, and clearing the tissues of accumulated toxic end-products of metabolism.

Bengué's Balsam exerts its analgesic action through its contained Menthol and Methyl Salicylate in lanolin, and thus offers a powerful medication whenever muscular and joint pains must be relieved.

MYALGIA

•

RHEUMATOID CONDITIONS

•

LUMBAGO

•

INFLUENZA

A generous free sample will be sent on request

BENGUÉ & CO. LTD., MOUNT PLEASANT, ALPERTON, WEMBLEY, MDX.

VEGETABLES FOR BABIES

—ready strained

CARROTS, SPINACH, PRUNES — *Picked at their prime; steam-cooked; vacuum-packed in glass bottles.*

ALSO BONE AND VEGETABLE BROTH

THE REASONS Brand's Baby Foods are superior to home-prepared vegetables :—

1. They are steam-cooked and packed *in vacuum*, which tends to conserve the vitamins. Full flavour and fresh colour retained.
2. They are so finely sieved that not a particle of irritant fibre remains.

The family doctor, who knows well the importance of an infant's first solid food, will have every confidence in recommending Baby Foods made by Brand & Co. Ltd. to the busy war-time mother.

BRAND'S BABY FOODS

7½d. a jar

PREPARED BY THE MAKERS OF BRAND'S ESSENCE

NO COUPONS

No matter how much or how little you already have, so long as you are a healthy life you can always apply for more LIFE ASSURANCE.

An "S.W.F." policy is life assurance *de luxe* at a *utility* price.

Ask for details from the Secretary,

SCOTTISH WIDOWS' FUND

Head Office:
9, St. Andrew Square,
Edinburgh, 2

JENNER INSTITUTE Glycerinated VACCINE LYMPH

PREPARED IN ACCORDANCE WITH THE THERAPEUTIC SUBSTANCES REGULATIONS (BRITISH PRODUCT)

Telephone: BATTERSEA 1347.

SINGLE VACCINATION TUBES - - - 10d. each; 8s. dozen. Postage extra.
LARGE TUBES (EXPORT Only) sufficient for 5 vaccinations, 1s. 6d. each; 15s. dozen.

Telegrams: "JENVACTER, PHONE, LONDON" (2 words).

JENNER INSTITUTE FOR CALF LYMPH LTD., 73, Battersea Church Road, S.W.11.

DOWN BROS.

LIMITED

SURGICAL INSTRUMENT AND HOSPITAL FURNITURE MANUFACTURERS

•

All Correspondence now to NEW HEAD OFFICE

23, PARK HILL RISE CROYDON

Telephone: Croydon 6133

•

Showrooms and Fitting Rooms

22a, CAVENDISH SQUARE LONDON, W.1 MAYfair 0406

MICROSCOPE OUTFITS WANTED

Highest prices paid. We may have what you want to buy or a near alternative. Your enquiry will receive our prompt attention.

DOLLONDS (L) (Estd. 1750)

Telephone:

LONDON 28, OLD BOND ST., W.1.....Regent 5048
428, STRAND, W.C.2.....Temple Bar 3775
35, BROMPTON RD., S.W.3 Kensington 2052
281, OXFORD ST., W.1 ..... Mayfair 0859
22a, SEVEN SISTERS RD., Holloway, N.7..Archway 3718

LARGE DEPARTMENT FOR MEDICAL BOOKS

FOYLES

BOOKSELLERS TO THE WORLD

BOOKS ON ALL SUBJECTS BOOKS BOUGHT

119-125 Charing Cross Road, London, W.C.2

Open 9 a.m.—6 p.m., including Saturday Tel.: GERrard 5660 (16 lines)

VALE ROYAL ABBEY

The New Cheshire Home of

MUNDESLEY SANATORIUM

This modernized mansion is situated in its own beautiful grounds in the heart of Cheshire. Terms from 6½ to 10½ guineas weekly. Tel.: Winsford 3336. Station: Hartford. Postal Address: Vale Royal Abbey, Hartford, Cheshire.

Medical and Surgical Staff:
S. VERE PEARSON, M.D. (Cantab.), M.R.C.P. (Lond.)
E. C. WYNNE-EDWARDS, M.B. (Cantab.), F.R.C.S. (Edin.)
GEORGE DAY, M.D. (Cantab.)

VALENTINE'S MEAT JUICE

STIMULATES APPETITE

•

AIDS DIGESTION

•

REDUCES NAUSEA

•

During the present International Emergency, importation is restricted.

VALENTINE'S MEAT JUICE Company, RICHMOND, VIRGINIA, U.S.A.

FENSTANTON at "FIVE DIAMONDS," Chalfont St. Giles, Bucks

A Private Home for the Care and Treatment of a limited number of LADIES with Mental and Nervous Disorders. Certified, Voluntary, and Temporary Patients received. Mansion with 12 acres of ground. (See *Medical Directory*, p. 2493.) Apply Resident Physician. Telephone: Little Chalfont 2046. Station: Chalfont and Latimer.

HEIGHAM HALL, NORWICH

PRIVATE MENTAL HOME for Nervous and Mental illness. All forms of treatment available. Fees from 4 gns. per week upwards according to requirements. Vacancies occasionally exist at reduced fees on the recommendation of the patient's own physician.

Apply to Dr. J. A. SMALL. Telephone: Norwich 20080

THE MAUDSLEY HOSPITAL, Denmark Hill, S.E.5

(LONDON COUNTY COUNCIL)

A CLINIC for Neurosis and Early Psychosis of Good Prognosis *providing facilities for out-patient treatment only.* Cases seen from 10 A.M. to 12 NOON from Monday to Friday inclusive. Patients seen by appointment, which can be arranged by the Psychiatric Social Worker, Maudsley Hospital (Telephone: RODney 3841). Clinics for children held at Maudsley Hospital at 10 A.M. on Mondays and Fridays.

Out-patient Clinics for adults held also at St. Charles' Hospital, St. Charles' Square, Ladbroke Grove, W.10, on Wednesdays at 1.30 P.M. and on Fridays at 10 A.M.; at St. Mary (Islington) Hospital, Highgate Hill, N.19, on Tuesdays and Fridays at 1.30 P.M.; and at Mile End Hospital, Bancroft Road, E.1, on Thursdays at 10 A.M. whole day.

Attendance at the Children's Clinics at Maudsley Hospital, and at the Clinics at St. Charles', St. Mary (Islington) and Mile End Hospitals by appointment with the Psychiatric Social Worker at Mill Hill Emergency Hospital, N.W.7. *Hours of attendance subject to alteration.*

BETHLEM ROYAL HOSPITAL

FOR NERVOUS AND MENTAL DISORDERS

Monks Orchard, Monks Orchard Road, Eden Park, Beckenham, Kent

Reg. Tel. Address: BETHLEM, BECKENHAM *Telephone:* SPRINGPARK 1180–1181

Station: EDEN PARK (Southern Railway)

President: HER MAJESTY QUEEN MARY *Vice-President:* SIR GEORGE WILKINSON, Bart., Alderman

Joint-Treasurers: EDMUND STONE, Esq., and JOHN L. WORSFOLD, Esq., O.B.E.

Physician-Superintendent: J. G. HAMILTON, Esq., M.D., D.P.M.

This REGISTERED Hospital is situated at Monks Orchard in some 250 acres of park, pleasure and farm grounds. Application can be considered on behalf of patients of the educated classes in a presumably curable condition.

With a view to early treatment voluntary or uncertified patients are admitted.

Patients who can contribute 5 guineas weekly towards the cost of treatment and maintenance may be received as vacancies arise. The Committee will also consider applications for admission at lower rates and in certain cases will be prepared to admit patients free of charge.

The comfort of sensitive patients is greatly enhanced by the fact that the majority are given single bedrooms.

TREATMENT ON MODERN PRINCIPLES. Every facility for specialised investigation and treatment is provided in the Lord Wakefield of Hythe Science and Treatment Unit, including RADIOLOGICAL and DENTAL DEPARTMENTS, BIO-CHEMICAL, PATHOLOGICAL and PSYCHOLOGICAL LABORATORIES.

The Medical Staff have access to a panel of Consultants in cases which present unusual symptoms requiring specialised investigation and treatment.

Under the direction of qualified officers HELIO-THERAPY, HYDRO-THERAPY and ELECTRO-THERAPY are administered in the Physio-Therapy Department.

SPECIALISED TREATMENT of various forms is given to suitable cases.

OCCUPATIONAL THERAPY in the form of various Arts and Crafts is actively encouraged from the medical aspect and under the guidance of a competent instructress this department has proved most effective as a therapeutic factor in all stages of mental illness.

The promotion of physical fitness is a prominent item of treatment and this is enhanced by arrangements for patients to take part in Outdoor and Indoor Sports and Entertainments.

Application should be made to the Physician-Superintendent.

VALE OF CLWYD SANATORIUM

This Sanatorium is established for the treatment of Tuberculosis of the Lungs and the Pleural Cavities. It is situated in the midst of a large area of park-land at a height of 450 feet above sea-level. Average rainfall 29·57 per annum. Full day and night Nursing Staffs. X-ray plant. Every facility for Artificial Pneumothorax and for operations on the Chest. Electric Lighting. Central Heating.

For particulars apply to Medical Superintendent.

H. MORRISTON DAVIES, M.D., M.Ch. (Cantab.), F.R.C.S., Llanbedr Hall, Ruthin, N. Wales.

THE OLD MANOR, SALISBURY

Telephone: 2216 & 2217

A Private Hospital for the Care and Treatment of those of both sexes suffering from MENTAL DISORDERS

Extensive grounds. Detached Villas. Chapel. Garden Produce from own gardens. Terms very moderate.

CONVALESCENT HOME AT BOURNEMOUTH

standing in 12 acres of ornamental grounds, with separate villas, tennis courts, etc. Patients or Boarders may visit the Home by arrangement.

Illustrated Brochure on application to the Medical Superintendent, The Old Manor, Salisbury.

COURT HALL, KENTON, near EXETER

FOR THE TREATMENT OF EIGHT LADIES, VOLUNTARY, TEMPORARY AND CERTIFIED PATIENTS

CLIFFDEN, TEIGNMOUTH

FOR EARLY AND CONVALESCENT CASES Recreational Therapies are held daily by skilled Leaders

The house stands high with spacious balconies and extensive views of the South Devon Coast. Beautiful garden. Own Dairy in 25 acres. Private road to beach

There is also a charming house, **EBWORTHY, MANATON, DARTMOOR**, situated in 20 acres, 1100 ft. up for bracing moorland air

Resident Physicians—BERTHA H. MULES, M.D., B.S. ANNE S. MULES, M.R.C.S., L.R.C.P. *Telephones*—STARCROSS 259 and TEIGNMOUTH 289

CAMBERWELL HOUSE, 33, Peckham Road, London, S.E.5

Telegrams: "PSYCHOLIA, LONDON" *Telephone:* ROD NEY 4343 (3 lines)

FOR THE TREATMENT OF MENTAL DISORDERS

Completely detached Villas for mild cases. Voluntary Patients received. Twenty acres of grounds; own garden produce. Hard and grass tennis courts, putting greens, Recreation Hall with Badminton Court, and all indoor amusements. Occupational therapy, Calisthenics, Actino-therapy, prolonged immersion baths, shock and also modified insulin treatment. Chapel.

Senior Physician, Dr. HUBERT JAMES NORMAN, assisted by a resident Medical Staff and visiting Consultants

An Illustrated Prospectus giving fees, which are strictly moderate, may be obtained upon application to the Secretary

The Convalescent Branch is HOVE VILLA, BRIGHTON and is 200 ft. above sea-level

PECKHAM HOUSE, 112, Peckham Road, London, S.E.15

Telegrams: "Alleviated, London" **Telephone: Rodney 2641-2642**

A Private Mental Hospital, for Ladies and Gentlemen suffering from Nervous and Mental Illness, where the amenities of a comfortable home are combined with full investigation and every well-established modern treatment.

Terms from £4.4.0 weekly.

Illustrated Prospectus may be obtained from the Physician Superintendent.

CALDECOTE HALL

NUNEATON

WARWICKSHIRE

('Phone : Nuneaton 241)

Residential treatment of

"Nervous Disorders" & Alcoholism

(Certifiable cases are not received)

This beautiful mansion situated in the heart of the country (less than two hours from London by L.M.S.R.) and surrounded by charming pleasure grounds in which games and outdoor occupational therapy are available is devoted to the treatment of Alcoholism and "Nerves" by psychotherapeutic and ancillary methods.

Illustrated Brochure and particulars obtainable from A. E. CARVER, M.D., D.P.M., Resident Medical Superintendent.

ST. ANDREW'S HOSPITAL

FOR NERVOUS AND MENTAL DISORDERS

NORTHAMPTON

PRESIDENT: THE MOST HON. THE MARQUESS OF EXETER, K.G., C.M.G., A.D.C.

MEDICAL SUPERINTENDENT: THOMAS TENNENT, M.D., F.R.C.P., D.P.H., D.P.M.

This Registered Hospital is situated in 130 acres of park and pleasure grounds. Voluntary patients, who are suffering from incipient mental disorders or who wish to prevent recurrent attacks of mental trouble; temporary patients, and certified patients of both sexes are received for treatment. Careful clinical, bio-chemical, bacteriological, and pathological examinations. Private rooms with special nurses, male or female, in the Hospital or in one of the numerous villas in the grounds of the various branches can be provided.

WANTAGE HOUSE

This is a Reception Hospital in detached grounds with a separate entrance, to which patients can be admitted. It is equipped with all the apparatus for the complete investigation and treatment of Mental and Nervous Disorders by the most modern methods; insulin treatment is available for suitable cases. It contains special departments for hydrotherapy by various methods, including Turkish and Russian baths, the prolonged immersion bath, Vichy Douche, Scotch Douche, Electrical baths, Plombières treatment, etc. There is an Operating Theatre, a Dental Surgery, an X-Ray Room, an Ultra-violet Apparatus, and a Department for Diathermy and High-frequency treatment. It also contains Laboratories for bio-chemical, bacteriological, and pathological research. Psychotherapeutic treatment is employed when indicated.

MOULTON PARK

Two miles from the Main Hospital there are several branch establishments and villas situated in a park and farm of 650 acres. Milk, meat, fruit, and vegetables are supplied to the Hospital from the farm, gardens, and orchards of Moulton Park. Occupational therapy is a feature of this branch, and patients are given every facility for occupying themselves in farming, gardening, and fruit growing.

BRYN-Y-NEUADD HALL

The seaside house of St. Andrew's Hospital is beautifully situated in a Park of 330 acres, at Llanfairfechan, amidst the finest scenery in North Wales. On the North-West side of the Estate a mile of sea coast forms the boundary. Patients may visit this branch for a short seaside change or for longer periods. The Hospital has its own private bathing house on the seashore. There is trout-fishing in the park.

At all the branches of the Hospital there are cricket grounds, football and hockey grounds, lawn tennis courts (grass and hard courts), croquet grounds, golf courses, and bowling greens. Ladies and gentlemen have their own gardens, and facilities are provided for handicrafts, such as carpentry, etc.

For terms and further particulars apply to the Medical Superintendent (TELEPHONE: No. 2356 and 2357 Northampton), who can be seen in London by appointment.

TOR-NA-DEE SANATORIUM

Managing Director: DAVID LAWSON, M.D., F.R.S.E.

FOR THE TREATMENT OF PULMONARY TUBERCULOSIS AND ALLIED DISEASES

Senior Physician and Medical Superintendent: R. Y. KEERS, M.D. (Edin.), F.R.F.P.S. (Glas.).

For prospectus apply to The Secretary, Tor-na-Dee, Murtle, Aberdeenshire Telephone: Cults 107

CHEADLE ROYAL

CHEADLE CHESHIRE

A Registered Hospital for MENTAL DISEASES, and its Seaside Branch, GLAN-Y-DON, Colwyn Bay, N. Wales

THE object of this Hospital is to provide the most efficient means for the treatment and care of those of the Upper and Middle Classes suffering from MENTAL and NERVOUS DISEASES. The Hospital is governed by a Committee appointed by the Trustees of the Manchester Royal Infirmary. VOLUNTARY, TEMPORARY, AND CERTIFIED PATIENTS RECEIVED

For Terms and further information apply to the MEDICAL SUPERINTENDENT Telephone: GATLEY 2231

THE MAGHULL HOMES FOR EPILEPTICS (Inc.)

MAGHULL, Near LIVERPOOL

Open Air Occupation and Recreation for Patients, Farming, Gardening, Football, Cricket, Tennis, Bowls, etc. School recognised by Ministry of Education.

FEES—

1st Class (men only)	from £3	per week
2nd Class (men and women)	„ 37/6	„
3rd Class (men and women) supported by Public Assistance Committees	„ 27/6	„
Education Committees	„ 33/6	„
Private	„ 21/-	„

For further particulars apply to—

C. EDGAR GRISEWOOD, A.C.A., 20, Exchange Street East, LIVERPOOL, 2.

CITY OF LONDON MENTAL HOSPITAL

Near DARTFORD, KENT

Ladies and Gentlemen received for treatment under certificates, and without certificates as either VOLUNTARY or TEMPORARY PATIENTS, at a weekly fee of £2 9s., and upwards

SPRINGFIELD HOUSE

'Phone: BEDFORD 3417. Near BEDFORD

For Mental Cases with or without Certificates.

Ordinary Terms: Five Guineas per week (including Separate Bedrooms for all suitable cases without extra charge).

For forms of admission, &c., apply to the Resident Physician, CEDRIC W. BOWER.

INTERVIEWS IN LONDON BY APPOINTMENT.

CHISWICK HOUSE,

PINNER, MIDDLESEX.

Telephone: PINNER 234.

A Private Hospital for the Treatment and Care of Mental and Nervous Illnesses in both Sexes.

A modern country house, 12 miles from Marble Arch, in attractive and secluded surroundings. Fees from 10 guineas per week inclusive. Cases under Certificate, Voluntary and Temporary Patients received for treatment.

DOUGLAS MACAULAY, M.D., D.P.M.

CRICHTON ROYAL, DUMFRIES

FOR NERVOUS AND MENTAL DISORDERS

Cases of Alcoholism and Drug Addiction are admitted. Every facility for individual treatment on the most modern lines. As the Hospital is well endowed, terms are exceptionally moderate.

Medical Certificates given anywhere in the British Isles are valid for admission of patients.

Physician Superintendent: P. K. MCCOWAN, J.P., M.D., F.R.C.P., D.P.M., Barrister-at-Law. Tel.: Dumfries 1119.

MALLING PLACE, KENT

For LADIES and GENTLEMEN of Unsound Mind

Terms moderate. Apply to Resident Medical Superintendent. Telegrams: ADAM WEST MALLING. Telephone No. 2: MALLING.

THE COTSWOLD SANATORIUM

On the Cotswold Hills, seven miles from Cheltenham, Stroud and Gloucester. Fully equipped for the treatment of all forms of Tuberculosis.

Terms: 6 to 10 guineas per week, inclusive.

Full particulars from MEDICAL SUPERINTENDENT, COTSWOLD SANATORIUM, CRANHAM, GLOUCESTER.

Telephone: Witcombe 2181 Telegrams: "Hoffman, Birdlip"

UNIVERSITY EXAMINATION POSTAL INSTITUTION
17, RED LION SQUARE, LONDON, W.C.1
Over 50 years' experience
POSTAL COACHING FOR ALL MEDICAL EXAMINATIONS
MEDICAL PROSPECTUS (24 pages)
sent gratis, along with List of Tutors, &c., on application to the Principal, 17, Red Lion Square, London, W.C.1. (Telephone: HOLborn 6318.)

L. M. S. S. A.

FINAL EXAMINATION: SURGERY, 12th February, 12th March, 8th April, 1945. MEDICINE, PATHOLOGY, 19th February, 19th March, 15th April, 1945. MIDWIFERY, 21st February, 20th March, 16th April, 1945. MASTERY OF MIDWIFERY EXAMINATIONS, May and November.

For regulations apply REGISTRAR, Apothecaries' Hall, Black Friars-lane, London, E.C.4.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

Lieutenant-Colonel C. H. Stuart-Harris, M.D., F.R.C.P., will deliver the GOULSTONIAN LECTURES ON TUESDAY, 16TH JANUARY, and THURSDAY, 18TH JANUARY, at 2.30 P.M. at the College, Pall Mall East, S.W.1.

Subject: "Influenza Epidemics and the Influenza Viruses."

Any Member of the Medical Profession admitted on presentation of card. By Order of the President.

H. E. A. BOLDERO, Registrar.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

ELECTION TO THE COURT OF EXAMINERS.

Notice is hereby given that the Council on the 12th April, 1945, will elect a Member of the Court of Examiners in the vacancy occasioned by the retirement of Mr. Seymour Barling.

Fellows of the College desirous of becoming candidates for the office must make application in writing to the Secretary on or before Monday, 29th January, 1945.

KENNEDY CASSELS, Secretary.

Lincoln's Inn-fields, London, W.C.2, 6th January, 1945.

THE MOUNT SCHOOL, YORK.

Boarding School under the management of the Society of Friends.

ENTRANCE AND SCHOLARSHIPS EXAMINATION FEBRUARY, 1945.

Application should be made immediately to the Headmistress.

OXO LIMITED.

IMPORTANCE OF NICOTINIC ACID.

The annual general meeting of Oxo Limited was held on Tuesday, 19th December, in London.

Mr. Kenneth M. Carlisle, who presided, said: Our manufacturing resources have been taxed to their utmost throughout the past year in the endeavour to produce maximum supplies of Lemco, Oxo, and Oxo cubes. In spite of our best efforts, we have not been able to satisfy all requirements: but we have taken great pains to share out supplies as fairly as possible among our many customers.

I need hardly remind you that our unseasoned extract of beef (Lemco) has been on the market for nearly 80 years and Oxo for over 40 years.

Scientific authorities have always recognised that beef extract is a valuable stimulator of the gastric secretions thus facilitating digestion and promoting the assimilation of other foods, but they have been generally reluctant to ascribe to it any other food value.

A VALUABLE VITAMIN.

It is therefore with great satisfaction that I am able to inform you of the recent discovery that beef extract is one of the richest sources of the important vitamin, nicotinic acid, an indispensable element in nutrition. This discovery provides scientific corroboration of the popular idea that beef extract increases muscular effort and stamina, for Frankau has shown as the outcome of a long series of carefully controlled experiments (*British Medical Journal*, 1943, ii, 601) that addition of nicotinic acid to the diet of healthy young adults produces increased muscular efficiency in undertaking severe tasks involving extra stamina and mental alertness.

The discovery that beef extract is a rich source of nicotinic acid is of special significance, as the public normally derive the greater portion of their requirements of this vitamin by consumption of meat. In these times of restricted meat supplies there is risk of malnutrition through deficiency of nicotinic acid in the diet. The regular use of beef extract products can be recommended as a means of avoiding this danger. Lemco, Oxo, and Oxo cubes all contain this valuable vitamin.

The report and accounts were adopted.

EXAMINING SURGEONS: Factories Act, 1937. The following appointments as Examining Surgeon under the Factories Act, 1937, are vacant. Applications should be sent to the Chief Inspector of Factories, St. James's-square, London, S.W.1.

District	*County*	*Latest date for receipt of application*
HAMILTON ..	LANARK ..	15TH JANUARY, 1945
WESTBURY ..	WILTS ..	15TH JANUARY, 1945

GLASGOW UNIVERSITY VACANCY.

REGIUS CHAIR OF ANATOMY.

The Secretary of State for Scotland announces that he proposes to invite applications for the office of Regius Professor of Anatomy at Glasgow University which is vacant on account of the death of Professor Duncan M. Blair.

Applications for the Chair, accompanied by 2 copies of recent testimonials, should be addressed to the Private Secretary, Scottish Office, Fielden House, 10, Great College-street, London, S.W.1, and should reach him not later than 24th February, 1945. A note of the terms and conditions of the appointment will be supplied on request.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.1. Applications are invited from registered medical Women for the appointment of JUNIOR ANÆSTHETIST AND JUNIOR CASUALTY OFFICER (A). Salary is at the rate of £120 p.a., with full residential emoluments. Duties to commence forthwith. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications, stating age and qualifications, should be sent on or before 13th January, 1945, to: RICHARD T. BARTLEY, Secretary.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.1. Applications are invited from registered medical practitioners for the whole-time appointment of RESIDENT EAR, NOSE, AND THROAT REGISTRAR (B1). Preference will be given to candidates with the Fellowship of England, Edinburgh or the D.L.O. qualification. Applicants must not be more than 10 years qualified. Salary £350 p.a. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating age and accompanied by copies of 3 recent testimonials, should be sent to the undersigned (from whom all information may be obtained) on or before 13th January, 1945. RICHARD T. BARTLEY, Secretary.

WEIR HOSPITAL, Weir-road, Balham, S.W.12. Applications are invited from registered medical practitioners for the appointment of a RESIDENT HOUSE SURGEON (B2), vacant in January, 1945. Salary is at the rate of £200 p.a., with full residential emoluments. W practitioners who now hold A posts may apply, when appointment will be limited to 6 months.

Applications, stating age, qualifications, nationality, and present post, and accompanied by copies of 3 recent testimonials, should be sent to the Honorary Secretary-Superintendent.

EVELINA HOSPITAL FOR SICK CHILDREN, London, S.E.1. Applications are invited from registered medical practitioners, Male and Female, for the appointment of CASUALTY AND OUT-PATIENT OFFICER (A), vacant 1st February, 1945. Salary £150 p.a. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when appointment will be for a period of 6 months.

Applications, stating age, qualifications with dates, and previous experience, accompanied by copies of recent testimonials, to be sent by first post on Wednesday, 10th January, 1945, to: W. H. SIDNELL, House Governor.

5th December, 1944.

THE ROYAL DENTAL HOSPITAL OF LONDON, Leicester Square, W.C.2. There are vacancies on the staff for 3 HONORARY ASSISTANT DENTAL SURGEONS. Candidates, who must be graduates or licentiates in dental surgery of one of the universities or licensing bodies recognised by the General Medical Council of the United Kingdom, are requested to send applications and testimonials or the names of referees by 31st July, 1945, to the Secretary, from whom further particulars may be obtained.

THE LONDON HOMŒOPATHIC HOSPITAL (Incorporated by Royal Charter), Great Ormond-street and Queen-square, W.C.1. Applications are invited from registered medical practitioners (Male and Female), including practitioners within 3 months of qualification and liable under the National Service Acts, for the appointment of HOUSE SURGEON (A), now vacant. The appointment will be for a period of 6 months. Salary is at the rate of £180 p.a., with full residential emoluments. Selected candidates will be required to attend a meeting of the Medical Committee for interview.

Applications to: L. J. KNOWLES, Secretary.

HAMPSTEAD GENERAL HOSPITAL, N.W.3. Applications are invited from registered medical practitioners (Male and Female) for the appointment of CASUALTY MEDICAL OFFICER (B2), Out-patient Department, Camden Town, N.W.1, vacant 1st March next, tenable for 6 months. Salary £100 p.a., with board, lodging, and laundry. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be down-graded temporarily to A. Practitioners qualified for more than 3 months and liable under the National Service Acts (males must be rejected by R.A.M.C.) may also apply.

Applications on the prescribed form, with copies of 3 testimonials, to be returned not later than 18th January.

KENNETH A. F. MILES, House Governor.

GUY'S HOSPITAL MEDICAL SCHOOL. Applications are invited for the appointment of ACTING SURGICAL REGISTRAR AND TUTOR (B1) from suitably qualified R practitioners (Male) holding B2 appointments. R practitioners now holding B1 appointments and rejected by the R.A.M.C. may apply.

Applications are also invited from medical officers recently discharged from the Services.

Salary will be at the rate of £550 or £350, according to experience, with board and lodging or £100 p.a. in lieu thereof. An additional honorarium will be paid by the Medical School for teaching duties.

The successful candidate will be enrolled as a whole-time officer in the Emergency Medical Service.

Applications, with copies of recent testimonials, to be sent to The Dean, Guy's Hospital Medical School, London Bridge, S.E.1, not later than Friday, 19th January, 1945.

HIS MAJESTY'S COLONIAL SERVICE

THE COLONIAL MEDICAL SERVICE

VACANCIES FOR MEDICAL OFFICERS

The maintenance of an efficient Colonial Medical Service constitutes a vital part of the national war effort and it is most important that the Service should be assured of an adequate supply of doctors.

The Secretary of State for the Colonies therefore invites applications from doctors possessing a medical qualification registrable in the United Kingdom who are British subjects and who are under thirty-five years of age.

Medical Officers are appointed in the first instance for general service. But there are ample opportunities for work in special branches of medicine and surgery, in public health and in medical research.

The normal salary scale is from £600 to between £1,000 and £1,120. There are large numbers of super-scale posts to which promotion is made on merit and which carry higher salaries.

Government quarters, in many cases free of rent, and first-class passages to and from the Colonies are provided, and an adequate pension scheme is in force.

Selected candidates are normally required to attend a course of instruction in Tropical Medicine and Hygiene either before proceeding overseas or during their first period of leave.

Further particulars, including the regulations governing admission to the Colonial Medical Service, may be obtained from the Director of Recruitment (Colonial Service), 2, Park-street, London, W.1.

LONDON COUNTY COUNCIL. Medical practitioners required for the undermentioned positions:—

1. TEMPORARY ASSISTANT MEDICAL OFFICER, Class I (B1). Salary £350 a year, rising by £25 a year to £425 a year, plus a temporary cost-of-living bonus.

Hospital	*Duties*
Colindale Hospital, The Hyde, N.W.9.	Experience in pulmonary tuberculosis desirable.
St. Alfege's Hospital, Vanbrugh Hill, S.E.10.	Obstetrics and gynæcology.
Lewisham Hospital, Lewisham, S.E.13.	General medical and anæsthetics.
Queen Mary's Hospital for Children, Carshalton, Surrey (2 vacancies).	(*a*) Medical. (*b*) Surgical.

Suitably qualified R and W practitioners holding B2 appointments, also R and W practitioners holding B1 appointments and rejected by the R.A.M.C., may apply.

2. TEMPORARY ASSISTANT MEDICAL OFFICER, Class II (B2). Salary £250 a year, plus temporary cost-of-living bonus.

Hospital	*Duties*
Lambeth Hospital, Brook-drive, Kennington-road, S.E.11.	Mainly surgical.
St. Giles' Hospital, St. Giles'-road, Camberwell, S.E.5.	General medical.
St. Olave's Hospital, Lower-road, Rotherhithe, S.E.16.	General medical and anæsthetics.
Bethnal Green Hospital, Cambridge Heath-road, E.2.	General medical and anæsthetics.
St. Andrew's Hospital, Devons-road, Bow, E.3.	Casualty officer.
St. Charles' Hospital, St. Charles'-square, Ladbroke Grove, W.10.	Casualty officer.
St. George-in-the-East Hospital, Raine-street, Wapping, E.1.	Casualty officer.
Queen Mary's Hospital for Children, Carshalton, Surrey (2 vacancies).	(*a*) Medical. (*b*) Surgical.

Various Hospitals in the infectious hospitals service.—Persons appointed to the infectious hospitals service are eligible for promotion to Class I (B1) (temporary rank) in that service after a minimum period of 6 months.

R and W practitioners who now hold A posts may apply, when appointment will be limited to 6 months.

All the above positions are with board, lodging, and washing. Married quarters are not available.

Application forms obtainable (stamped foolscap envelope required) from the Medical Officer of Health (S.D.2), The County Hall, S.E.1, returnable by 15th January, 1945. Canvassing disqualifies.

BOLINGBROKE HOSPITAL, Wandsworth Common, London, S.W.11. The Board of Governors invite applications for the post of TEMPORARY HONORARY OPHTHALMIC SURGEON. Candidates must be Fellows of a Royal College of Surgeons and engaged only in consulting practice.

Applications, stating age, qualifications, and enclosing copies of 3 recent testimonials, to be forwarded as soon as possible to—

W. S. RANDOLPH BISS, Secretary-Superintendent.

WEMBLEY BOROUGH COUNCIL, with the consent of the Ministry of Health according to Circular 2818, invite applications for the temporary post of whole-time ASSISTANT MEDICAL OFFICER OF HEALTH. While the duties will be mainly in the Maternity and Child Welfare Services of the Council, the officer will be required to undertake such other duties as the Medical Officer of Health with the consent of the Council may assign from time to time. Candidates should, subsequent to qualification, have had at least 3 years' experience in the practice of their profession, and special experience in midwifery and antenatal work. They should have had hospital experience in maternity and child welfare work. A Diploma in Public Health would be considered an additional recommendation. The salary scale is from £600 p.a., rising by annual increments of £25 to £750 (plus the Council's scale of war-time bonus). The appointment will be subject to the successful candidate passing a medical examination and will be terminable by 1 calendar month's notice on either side. Candidates should submit with their application full information as to their liability to military service, medical fitness, and position as regards deferment.

Applications, giving particulars of qualifications and experience, should be sent to the Medical Officer of Health, Town Hall, Forty-lane, Wembley, not later than 12th January, 1945.

Canvassing in any form will disqualify.

ROYAL WATERLOO HOSPITAL FOR CHILDREN AND WOMEN, Waterloo-road, S.E.1. Applications are invited from registered medical practitioners (Male or Female) for the appointment of RESIDENT HOUSE SURGEON (A), vacant 1st February, 1945. The salary is at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when appointment will be for 6 months.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of 3 recent testimonials, should be sent to: J. H. TEASDALE, Secretary.

MIDDLESEX COUNTY COUNCIL. Junior Assistant Medical OFFICER (B2, resident, Woman) required for maternity unit of West Middlesex County Hospital, Isleworth, Middlesex, and annexe at Chiswick. Applications invited from registered medical practitioners, including W practitioners who now hold A posts. Salary £250 p.a., plus war bonus. Board, lodging, and laundry. Whole-time obstetric duties, such as Council may require, under supervision of Medical Director. Appointment, subject to medical examination and 1 month's notice, is for 6 months with possibility of extension to 12 months (except W practitioners). Post vacant 1st February, 1945.

Applications, stating age, nationality, qualifications, and experience, enclosing copies of not more than 3 recent testimonials, to Medical Director, "B3," of Hospital. Closing date 17th January, 1945.

C. W. RADCLIFFE, Clerk of the County Council.

Middlesex Guildhall, Westminster, S.W.1.

MIDDLESEX COUNTY COUNCIL. Junior Assistant Medical OFFICER (B2, resident) required for surgical duties at Redhill County Hospital, Edgware, Middlesex. Applications invited from registered medical practitioners, including R and W practitioners who now hold A posts. Salary £250 p.a., plus war bonus. Board, lodging, and laundry. Whole-time surgical duties, such as Council may require, under supervision of Medical Director. Appointment subject to medical examination and 1 month's notice, is for 6 months with possibility of extension to 12 months, except R and W practitioners. Post vacant 27th January, 1945.

Applications, stating age, nationality, qualifications, and experience, enclosing copies of not more than 3 recent testimonials, to Medical Director, "B3," of Hospital. Closing date 20th January, 1945.

C. W. RADCLIFFE, Clerk of the County Council.

Middlesex Guildhall, Westminster, S.W.1.

MIDDLESEX COUNTY COUNCIL. Casualty Officer (B1, non-resident) required at West Middlesex County Hospital, Isleworth, Middlesex. Applications invited from registered medical practitioners who have held house appointments and had considerable all-round experience (including R and W practitioners holding B2 posts). R and W practitioners holding B1 posts ineligible unless rejected by R.A.M.C. Salary £350 p.a., plus £100 p.a. non-resident allowance, plus war bonus. Whole-time duties under Medical Director will include dealing with casualties and admissions to hospital and such other duties as may be required. Appointment, subject to medical examination and 1 month's notice, is for 6 months, with possibility of extension to 12 months. Post vacant 1st February, 1945.

Applications, stating age, nationality, qualifications, and experience, enclosing copies of not more than 3 recent testimonials, to Medical Director, "B3," of Hospital. Closing date 17th January, 1945.

C. W. RADCLIFFE, Clerk of the County Council.

Middlesex Guildhall, Westminster, S.W.1.

CHESTERFIELD AND NORTH DERBYSHIRE ROYAL HOS-PITAL. Applications are invited from registered medical practitioners (Male or Female) for the post of HOUSE SURGEON (A). Salary at the rate of £225 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when appointment will be for 6 months.

Applications to be forwarded as soon as possible to—

M. H. BOONE, House Governor and Secretary.

HIGH WYCOMBE AND DISTRICT WAR MEMORIAL HOS-PITAL. (100 Beds.) Applications are invited from registered medical practitioners for the appointment of RESIDENT MEDICAL OFFICER (B2), vacant 12th February, 1945. Salary at rate of £200 p.a., plus residence and board. R practitioners holding A posts may apply. The appointment is for 6 months.

Applications, with details, to: E. BARBER, Secretary.

THE WILLESDEN GENERAL HOSPITAL, Harlesden-road, N.W.10. Applications are invited from registered medical practitioners, including practitioners within 3 months of qualification and liable under the National Service Acts, for the appointment of RESIDENT HOUSE PHYSICIAN (A), vacant 1st February, 1945. The appointment will be for a period of 6 months and salary at the rate of £130 p.a., with full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, accompanied by copies of 3 recent testimonials, should be sent immediately to: J. N. DRAKE, Secretary.

THE STAFFORDSHIRE GENERAL INFIRMARY, Stafford. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), to commence duties immediately. Salary £196 p.a., with board-residence. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when appointment will be for 6 months.

Applications, with full particulars as to age and qualifications, accompanied by 3 recent testimonials, to be forwarded to the Secretary.

Stafford, 13th December, 1944.

ROYAL BUCKINGHAMSHIRE HOSPITAL, Aylesbury. Applications are invited for the post of PAEDIATRICIAN on the Honorary Medical and Surgical Staff. Candidates must be Fellows or Members of the Royal College of Physicians and engaged in consultant practice.

Full particulars regarding the appointment may be obtained from the Secretary-Superintendent, to whom applications should be sent not later than 22nd January, 1945.

27th December, 1944.

ROYAL BUCKINGHAMSHIRE HOSPITAL, Aylesbury. (150 Beds.) Applications are invited from registered medical practitioners for the post of HOUSE SURGEON (A), vacant from about 15th January, 1945. Salary at the rate of £120 p.a., with full residential emoluments. Opportunities afforded to work with London consultants, and to undertake duties in all branches of medical and surgical practice, including anæsthesia. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications, together with copies of 2 recent testimonials, to be sent immediately to the Secretary-Superintendent.

27th December, 1944.

THE KING EDWARD VII WELSH NATIONAL MEMORIAL ASSOCIATION. Applications are invited from duly registered medical practitioners (Male or Female) for AREA ASSISTANT TUBERCULOSIS OFFICER. The immediate vacancy is in the Denbigh and Flint Area, headquarters at Wrexham. The officer appointed will be required to devote his whole time to his official duties. He must refund to the Association all fees received by him. The appointment will be subject to 1 month's notice on either side, and in general appointments made by the Association during the war are regarded as open to review after the war. Salary £500–£25–£750 p.a., plus bonus (with point of entry according to experience). The Local Government Act, 1937, is applicable to the Association. Candidates should preferably have had at least 6 months' special training in tuberculosis, and also 18 months' experience in general clinical work, of which not less than 6 months should have been spent in a hospital as resident officer in charge of beds occupied by general medical or surgical cases. A knowledge of Welsh is desirable but not essential.

Applications, stating age, qualifications, experience, medical fitness, and full information as to liability for military service, together with copies of 3 recent testimonials, should be received by the undersigned immediately.

N. TATTERSALL, Principal Medical Officer.

Memorial Offices, Cathays Park, Cardiff.

MAIDENHEAD VOLUNTARY HOSPITAL, Berkshire. Applications are invited from registered medical practitioners, Male and Female, for the appointment of RESIDENT MEDICAL OFFICER (B2), vacant now. The salary is at the rate of £200 p.a., with full residential emoluments. R and W practitioners who now hold A posts may apply, when the appointment will be limited to 6 months; otherwise for a period of 1 year.

Applications, stating age and nationality, and with copies of testimonials, should be sent as soon as possible to the Superintendent-Secretary.

WARRINGTON INFIRMARY AND DISPENSARY. Applications are invited from registered medical practitioners, Male and Female, for the appointment of JUNIOR HOUSE SURGEON (A), now vacant. Salary is at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Apply immediately to the Superintendent and Secretary.

NEWARK TOWN AND DISTRICT HOSPITAL. (70 Normal Beds.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), now vacant. Salary is at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

B. C. DION, Secretary-Superintendent.

THE BOLTON ROYAL INFIRMARY. (270 Beds.) (Resident Medical Staff—6.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), vacant 23rd January, 1945. Salary £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications, stating age, nationality, and experience, together with copies of testimonials, to be forwarded to—

JOSEPH GRIFFITH, Superintendent-Secretary.

HEREFORDSHIRE GENERAL HOSPITAL, Hereford. (204 Beds.) Applications are invited from registered medical practitioners, including practitioners within 3 months of qualification and liable under the National Service Acts, for the appointment of JUNIOR HOUSE SURGEON (A), including House Surgeon to Ear, Nose, and Throat Department. The appointment will be limited to 6 months. Salary is at the rate of £150 p.a., with full residential emoluments.

Applications, stating age, qualifications, and nationality, and accompanied by copies of 3 recent testimonials, should be sent to; T. W. UPTON, Secretary.

LEIGH INFIRMARY, Lancs. (General Hospital, 102 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), vacant mid-January. Salary is at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months; otherwise for 12 months.

Applications from friendly alien practitioners are also invited.

Applications, stating age and accompanied by copies of 3 testimonials, to be addressed to—

(Miss) F. M. EVISON, Acting Secretary.

ROYAL HOSPITAL, Richmond, Surrey. Applications are invited from registered medical practitioners, Male and Female, for the appointments of HOUSE SURGEON (A) and HOUSE PHYSICIAN AND CASUALTY OFFICER (A), now vacant. Salary is at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointments will be for a period of 6 months.

Apply to the House Governor.

NUNEATON EMERGENCY HOSPITAL. County of Warwick. Applications are invited from registered medical practitioners (Male and Female) for the appointment of RESIDENT MEDICAL OFFICER (B2), now vacant. Salary £350 p.a., together with the usual residential emoluments. R and W practitioners holding A posts may also apply, when appointment will be limited to 6 months; otherwise will not exceed 1 year.

Application should be made on forms which may be obtained from: H. J. KOTCH, Shire Hall, Warwick, and should be returned to him on completion not later than the 26th January, 1945.

SALFORD ROYAL HOSPITAL. Applications are invited from registered medical practitioners for the appointment of HOUSE SURGEON (A), vacant 21st January. Salary £150 p.a., with usual residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications to be made on the prescribed form obtainable from the General Superintendent at the Hospital.

29th December, 1944.

ROYAL VICTORIA INFIRMARY, Newcastle upon Tyne. Applications are invited from registered medical practitioners for the appointment of RESIDENT MEDICAL OFFICER (B1) (Male). The Resident Medical Officer is the senior resident; his duties include general charge of the Admission Department and the supervision of medical emergencies. Preference will be given to candidates holding diploma of M.R.C.P. The appointment is for 1 year and is renewable annually for a period not exceeding 3 years. Salary is at the rate of £350 p.a., resident. Suitably qualified R practitioners holding B2 appointments, also those now holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating age, nationality, qualifications with dates, experience and details of previous appointments, and accompanied by copies of 3 recent testimonials, should be sent immediately to: A. W. SANDERSON, House Governor.

27th December, 1944.

ROYAL VICTORIA INFIRMARY, Newcastle upon Tyne. Applications are invited from registered medical practitioners for the appointment of RESIDENT SURGICAL OFFICER (B1) to the Orthopædic Department, vacant 1st February, 1945. Applicants should have held house appointments and had surgical experience. Preference will be given to candidates holding diploma of F.R.C.S. The appointment is for 1 year and is renewable annually for a period not exceeding 3 years. Salary is at the rate of £300 p.a., resident. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating age, nationality, qualifications with dates, experience and details of previous appointments, and accompanied by copies of 3 recent testimonials, should be sent immediately to: A. W. SANDERSON, House Governor.

27th December, 1944.

THE ROYAL HOSPITAL, Wolverhampton. (Incorporated under Royal Charter.) (310 Beds.) Applications are invited from registered medical practitioners for the appointment of RESIDENT REGISTRAR (B1) to the Ear, Nose, and Throat Department, vacant immediately. Applicants should have held house appointments and had surgical experience. Preference will be given to candidates holding diploma of F.R.C.S. and D.L.O. Salary up to £400 p.a., according to experience, with full residential emoluments. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

1st January, 1945. W. COCKBURN, House Governor.

THE ROYAL HOSPITAL, Wolverhampton. (Incorporated under Royal Charter.) (310 Beds.) Applications are invited from registered medical practitioners, Male or Female, for the appointment of RESIDENT ANÆSTHETIST (B2), vacant 8th January, 1945. Salary is at the rate of £200 p.a., with full residential emoluments. R and W practitioners who now hold A posts may apply, when the appointment will be limited to 6 months; otherwise for a period of 12 months.

1st December, 1944. W. COCKBURN, House Governor.

ROYAL WEST SUSSEX HOSPITAL, Chichester. Applications are invited from registered medical practitioners, Male and Female, for the appointment of RESIDENT MEDICAL OFFICER (B2), vacant 29th January, 1945. The salary is at the rate of £225 p.a., with full residential emoluments. R and W practitioners holding A posts may also apply, when appointment will be limited to 6 months.

Applications, with copies of 3 testimonials, to—
K. H. WILLIAMS, Secretary.

ROYAL WEST SUSSEX HOSPITAL, Chichester. Applications are invited from registered medical practitioners for the appointment of CASUALTY OFFICER AND HOUSE SURGEON (A). Appointment is for 6 months from date of appointment. Salary £150 p.a., with residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply.

Applications, stating age, qualifications with dates, and nationality, supported by copies of 3 recent testimonials, should be sent to the House Governor and Secretary.

SURREY COUNTY COUNCIL. St. Helier County Hospital, CARSHALTON. (862 Beds.) Applications are invited for the appointment of Full-time RADIOLOGIST to the above acute general hospital. Applicants should have had wide X-ray experience and must possess the D.M.R.E. qualification. The salary is at the rate of £800 p.a., plus full residential emoluments valued at £125 p.a. (or cash in lieu thereof). The appointment is temporary for the further duration of the war and is subject to 3 months' notice on either side, but any Local Government Superannuation rights will be preserved.

Applications to the County Medical Officer, County Hall, Kingston-on-Thames, by 10th January, 1945.

SURREY COUNTY COUNCIL. Kingston County Hospital, Wolverton-avenue, KINGSTON-ON-THAMES. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A) at the above Hospital. Salary is at the rate of £120 p.a., plus full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months; otherwise not exceeding 1 year.

Apply to the Medical Superintendent.

ST. ALBANS AND MID HERTS HOSPITAL, Church-crescent, ST. ALBANS, HERTS. (75 Beds.) Applications are invited from registered medical practitioners, Male or Female, for the appointment of RESIDENT MEDICAL OFFICER (A), vacant 1st January, 1945. Salary at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when the appointment will be for 6 months.

Applications, giving full particulars, together with copies of testimonials, to: Mr. P. R. BATTISON, Secretary.

DERBYSHIRE ROYAL INFIRMARY, Derby. (General Hospital—416 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of 2 HOUSE SURGEONS (1 B1 and 1 B2), vacant now. Salary at the rate of £200 p.a., with full residential emoluments.

For the B1 post, suitably qualified R and W practitioners holding B2 appointments, also R practitioners holding B1 and rejected by the R.A.M.C., may apply; and for the B2 post, R and W practitioners who now hold A posts may apply, when the appointment will be limited to 6 months.

Applications, together with testimonials, should be sent as soon as possible to—
ARTHUR TAYLOR, Superintendent and Secretary.

SCARBOROUGH HOSPITAL, Yorkshire. (Normally 140 Beds.) Applications are invited from Female registered medical practitioners for the post of HOUSE SURGEON (A) and HOUSE PHYSICIAN (A). The appointments are for 6 months commencing January, 1945, and the salary is at the rate of £175 p.a. each, with board, residence, laundry, &c. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply.

Applications, with age, testimonials, qualifications, &c., to be sent immediately to the Secretary.

CITY AND COUNTY OF NEWCASTLE UPON TYNE. Emergency Maternity Hospital, Gilsland. (120 Beds.) HOUSE SURGEON (B2). Applications are invited from registered medical practitioners, Male or Female, including R and W practitioners who now hold A posts, for the above post, shortly vacant. The appointment is tenable for 6 months and the salary is at the rate of £200 p.a., plus cost-of-living bonus and full residential emoluments.

Applications to be forwarded to the Medical Officer of Health, Town Hall, Newcastle upon Tyne, 1.

WORCESTER ROYAL INFIRMARY. Applications are invited for the position of HOUSE SURGEON (A). The salary will be at the rate of £120 a year, with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications, with copies of not more than 3 testimonials, should be addressed to—
HAROLD WIGG, Acting Superintendent-Secretary.

BURY INFIRMARY (Lancs). (159 Beds.) Applications are invited from registered medical practitioners for the appointment of RESIDENT SURGICAL OFFICER (B1), vacant about the end of January. Applicants should have held house appointments and had surgical experience. Preference will be given to candidates holding diploma of F.R.C.S. Salary is at the rate of £400 p.a., with full residential emoluments. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners holding B1 and rejected by the R.A.M.C., may apply.

Applications, giving particulars of age, qualifications, nationality, &c., as soon as possible to—
H. WILKINSON, Superintendent.

CITY OF MANCHESTER. Booth Hall Hospital for Sick Children. (760 Beds.) Applications are invited from registered medical practitioners, Male or Female, for the appointments of RESIDENT ASSISTANT MEDICAL OFFICERS (A), vacant in February, 1945. The duties of one of the posts are mainly medical and of the other mainly surgical. The basic salary for the appointment is £200 p.a., with board, residence, and laundry in addition, subject to the Manchester Corporation conditions of service. A temporary cost-of-living wages addition is payable in addition to the salary stated. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointments will be for a period of 6 months; otherwise for 12 months.

Applications, stating the full name, age (giving date of birth), nationality, professional qualifications (with dates), particulars of present and past hospital appointments, are to be addressed to the Medical Superintendent, Booth Hall Hospital, Charlestown-road, Blackley, Manchester, 9, and must be received by him not later than 17th January, 1945. Canvassing in any form is prohibited.
PHILIP B. DINGLE, Town Clerk.

Town Hall, Manchester, 2, 22nd December, 1944.

CITY OF PLYMOUTH. City General Hospital. Applications are invited from duly qualified and registered medical practitioners, Male and Female, including practitioners within 3 months of qualifying and liable under the National Service Acts, for the appointment of JUNIOR ASSISTANT MEDICAL OFFICER (A) at the City General Hospital, Plymouth. The appointment will be for a period of 6 months and terminable by 1 month's notice on either side at any time. Salary at the rate of £250 p.a., plus war bonus, with full residential emoluments. All fees received by the officer must be refunded to the City Council. The applicants should have some postgraduate experience in obstetrics as the duties will be primarily those of an Assistant in the Obstetrical and Gynecological Department, but in addition there will also be other general hospital duties.

Forms of application are not provided. Applications must be addressed to the undersigned, together with copies of not more than 3 recent testimonials, as soon as possible.
T. PEIRSON, Medical Officer of Health.

Seven Trees, Lipson-road, Plymouth.

COUNTY BOROUGH OF DEWSBURY. The Council, with the approval of the Minister of Health, invite applications from registered medical practitioners holding a Diploma in Public Health for the vacancy of TEMPORARY DEPUTY MEDICAL OFFICER OF HEALTH AND DEPUTY SCHOOL MEDICAL OFFICER. Salary £700, plus bonus (Male £49 8s., Female £40 6s.). Terms and conditions of the appointment, together with application form, may be obtained from the Medical Officer of Health, Municipal Buildings, Halifax-road, Dewsbury, to whom applications, accompanied by copies of 3 recent testimonials, should be delivered as soon as possible. The appointment will be subject to the approval of the Minister of Health and the provisions of the Local Government Superannuation Act, 1937. It will be terminated by 3 months' notice on either side.

The person appointed will be required to pass a medical examination, to devote his or her time to the duties of the appointment, and to reside in this borough.
HOLLAND BOOTH, Town Clerk.

Town Hall, Dewsbury, 20th December, 1944.

CITY OF PORTSMOUTH. Saint Mary's Hospital. (1200 Beds.) Applications are invited from registered medical practitioners for the appointment of RESIDENT SURGICAL OFFICER (B1), vacant shortly. Applicants should have held resident appointments for at least 2 years, of which at least 1 year should have been as Resident House Surgeon, and should have had practical experience in operative surgery for at least 1 year, and should hold the Fellowship of the Royal College of Surgeons. The salary is at the rate of £575 p.a., with emoluments valued at £150, together with cost-of-living bonus at present at the rate of £49 8s. p.a. Suitably qualified R practitioners holding B2 appointments, also those now holding B1 and rejected by the R.A.M.C., may apply.

Application forms may be obtained from, and must be returned to, the Medical Officer of Health, Northern Secondary School, Mayfield-road, not later than Saturday, 20th January, 1945.
FREDERICK SPARKS, Town Clerk.

Municipal Offices, Royal Beach Hotel, Southsea,
21st December, 1944.

THE GUEST HOSPITAL, Dudley. (The Resident Staff consists of a Resident Surgical Officer and 2 House Surgeons.) Applications are invited from registered medical practitioners, Male and Female, including R and W practitioners who now hold A posts, for the following appointments:—

HOUSE SURGEON (B2), vacant 8th January, 1945. The salary is at the rate of £200 p.a., with full residential emoluments.

CASUALTY HOUSE SURGEON (B2), vacant 1st February, 1945. The salary is at the rate of £200 p.a., with full residential emoluments.

To R and W practitioners the appointments will be limited to 6 months.
H. RAYMOND HURST,
21st December, 1944. House Governor and Secretary.

CORPORATION OF DUNDEE. Public Health Department. DUNDEE MENTAL HOSPITAL. Applications are invited from registered medical practitioners for the appointment of SENIOR ASSISTANT MEDICAL OFFICER (B1), now vacant. Salary is at the rate of £500 p.a. with war bonus, and full residential emoluments. Suitably qualified R and W practitioners holding B2 or B1 appointments are invited to apply, but they must have obtained the sanction of the Scottish Central Medical War Committee, Edinburgh, to their application.

Applications, stating age, nationality, qualifications with dates, experience and details of previous appointments, and accompanied by copies of 3 recent testimonials, should be sent at once to the Medical Superintendent, Mental Hospital, Liff, Dundee.
WILLIAM BORLAND, Town Clerk.

City Chambers, Dundee, December, 1944.

COUNTY BOROUGH OF BURNLEY. Applications are invited from registered medical practitioners (either sex) for the appointment of TEMPORARY ASSISTANT MEDICAL OFFICER OF HEALTH (B1). The duties will be mainly those connected with maternity and child welfare and the Council's Maternity Hospital. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply. The salary will be £600 p.a., rising, subject to satisfactory service, by £25 p.a. to a maximum of £700 p.a., plus war bonus according to cost of living. If a single person is appointed there will be a deduction of £125 p.a. for board, lodging, and laundry. If a married man is appointed there will be a deduction of £70 p.a. for house, fuel, and light. The successful applicant will be required to devote whole time to the services of the Council and to reside in the quarters provided. The appointment will be subject to the provisions of the Local Government Act, 1937, and the successful candidate will be required to pass a medical examination.

Further particulars of duties, conditions of appointment, and forms of application may be obtained from the Medical Officer of Health, 27, St. James's-street, Burnley, to whom applications, together with copies of 3 recent testimonials, should be sent not later than 15th January, 1945.

Town Hall, Burnley. ARCHIBALD GLEN, Town Clerk.

THE ROYAL ASYLUM OF MONTROSE. (999 Beds.) Applications are invited for the post of THIRD ASSISTANT MEDICAL OFFICER (B2) (Man, single, or Woman). Preference will be given to a candidate interested in pathology, for which a finely equipped laboratory is available. Opportunity will be given to take the course for the Diploma of Psychiatry. Salary commencing at £350 p.a., with full residential emoluments. R practitioners who hold A posts may apply, when appointment will be for a period of 6 months; they must have obtained the sanction of the Scottish Central Medical War Committee to their application.

Applications should be addressed to the Physician-Superintendent.

COUNTY BOROUGH OF HUDDERSFIELD. Appointment of ASSISTANT MEDICAL OFFICER OF HEALTH. Applications are invited from registered medical practitioners (Ladies) who have had special experience in antenatal work and in the care of infants. Salary £500–£25–£700, with additional war bonus, at present £40 6s. Initial salary according to experience. The post will be designated under the Local Government Superannuation Acts, and the successful candidate will be required to pass a medical examination before being appointed to the position.

Applications, stating age, full particulars regarding training, qualifications, and appointments held since qualification, should be forwarded to the Medical Officer of Health, Public Health Department, Huddersfield, along with copies of 2 recent testimonials, as soon as possible. Application forms are not provided. SAMUEL PROCTER, Town Clerk.

Town Hall, Huddersfield, December, 1944.

ROYAL INFIRMARY, Preston. Applications are invited from registered medical practitioners, including R practitioners who now hold A posts, for the appointment of

CASUALTY OFFICER (B2), vacant early January. Salary at the rate of £200 p.a., with full residential emoluments.

Also from medical practitioners, Male and Female, for the appointment of

RESIDENT ANÆSTHETIST (B2) (recognised by the R.C.S. (Eng.) in connexion with the D.A.), vacant January. There is a Visiting Anæsthetist (D.A.) who will give teaching instruction. Salary at the rate of £200 p.a., with full residential emoluments.

To R or W practitioners appointments will be limited to 6 months.

Applications to be sent as soon as possible to the Superintendent.

ROYAL INFIRMARY, Preston. Applications are invited from registered medical practitioners (including practitioners within 3 months of qualification and liable under the National Service Acts) for the following post:—

HOUSE SURGEON (A) to Consulting Surgeon (recognised for the F.R.C.S. examination).

Salary is at the rate of £150 p.a., with full residential emoluments. 6 months' appointment.

Applications, with full details, to be sent to the Superintendent.

HUDDERSFIELD ROYAL INFIRMARY. (321 Beds.) House SURGEON (A) required to commence as soon as possible. Duties will include those of House Surgeon to the Abnormal Maternity Department. Salary at the rate of £187 10s., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications should be sent immediately to—

H. J. JOHNSON, General Superintendent and Secretary.

LINCOLN COUNTY HOSPITAL. (Voluntary Hospital—200 Beds.) Applications are invited from registered medical practitioners, Male or Female, for the appointment of HOUSE SURGEON (A), vacant 1st February, 1945. Salary is at the rate of £225 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when the appointment will be for 6 months.

ARTHUR MOORE, Secretary-Superintendent.

7th December, 1944.

ST. BARTHOLOMEW'S HOSPITAL, Rochester. (201 Beds.) Applications are invited from registered medical practitioners, Male, for the appointment of CASUALTY OFFICER (A), now vacant. The appointment is for 6 months and the salary is at the rate of £150 p.a., with additional war-time distribution of approximately £50 p.a. and full residential emoluments. Practitioners within 3 months of qualification and liable for National Service may apply.

Applications, stating full particulars, together with copies of recent testimonials, to be forwarded as soon as possible.

T. RHODES, Superintendent-Secretary.

CITY OF PORTSMOUTH. St. James Hospital for Mental and NERVOUS DISEASES. Applications are invited from registered medical practitioners, including suitably qualified R and W practitioners holding B2 appointments, or those holding B1 posts who have been rejected by the R.A.M.C., for the B1 appointments of (1) SENIOR ASSISTANT MEDICAL OFFICER, and (2) SECOND ASSISTANT MEDICAL OFFICER.

The commencing salary for the senior post is £500 p.a., plus full residential emoluments valued at £150 p.a. with war-time bonus of £24 14s. p.a. and an extra £50 p.a. for holders of the D.P.M., rising by £50 p.a. to £700.

The commencing salary for the Second Assistant post is £400 p.a., plus full residential emoluments valued at £150 p.a. with war-time bonus of £24 14s. p.a. and an extra £50 p.a. for holders of the D.P.M., rising by £50 p.a. to £600.

There is a comprehensive Mental Health Service for the City of Portsmouth based on the Hospital. The posts involve work in all branches of psychiatry, including Out-patients' Clinics, psychoses, psychoneuroses, delinquency and child guidance.

Applications should be addressed to Dr. Thomas Beaton, O.B.E., Medical Superintendent, St. James Hospital, Milton, Portsmouth. FREDERICK SPARKS,

Town Clerk and Clerk to the Visiting Committee.

Municipal Offices, Royal Beach Hotel, Southsea,

December, 1944.

ROCHDALE INFIRMARY, Lancs. (110 Beds.) The Board of Management invite applications from registered medical practitioners (Male or Female) for the appointment of HOUSE PHYSICIAN (A), vacant shortly. Salary is at the rate of £150 p.a., with full residential emoluments. Duties include work in ophthalmic, aural, and gynæcological departments, as well as medical clinic, and afford excellent opportunity for experience. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

The successful candidate must be a member of a Medical Defence Society. W. WYNNE, Superintendent-Secretary.

VICTORIA HOSPITAL, Accrington. Applications are invited from medical practitioners for the following appointments:—

HOUSE SURGEON (B2). The salary is at the rate of £200 p.a., with full residential emoluments. R and W practitioners who now hold A posts may apply, when the appointment will be for a period of 6 months.

HOUSE PHYSICIAN (A). Salary is at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications, with copies of testimonials, to Honorary Secretary, Victoria Hospital, Accrington.

ANCOATS HOSPITAL, Manchester, 4. Applications are invited from medical practitioners (Male or Female) for the appointment of HOUSE PHYSICIAN (A) to one of the Honorary Physicians and HOUSE SURGEON to the Ear, Nose, and Throat Department (joint post). Salary £120 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply. The appointment is for 6 months.

Applications, stating age, nationality, when qualified, and full particulars, to be forwarded, together with copies of 3 recent testimonials, on or before the 10th January, 1945.

HERBERT J. DAFFORNE,

General Superintendent and Secretary.

WESTON-SUPER-MARE GENERAL HOSPITAL. (100 Beds.) Applications are invited from medical practitioners (Male) for the appointment of HOUSE PHYSICIAN (A), duties to commence on or about the 20th January, 1945. Salary is at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when appointment will be for 6 months.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of 3 recent testimonials, should be addressed to: LESLIE J. FURSLAND, Secretary.

SALOP COUNTY COUNCIL HOSPITAL, Cross Houses, near SHREWSBURY. Applications are invited from registered medical practitioners, Male and Female, for the appointment of RESIDENT MEDICAL OFFICER (A). Salary is at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months: otherwise 1 year.

Applications, stating age, qualifications with dates, and nationality, accompanied by copies of 3 recent testimonials, should be sent to the County Medical Officer of Health, College Hill, Shrewsbury, not later than 15th January, 1945.

G. C. GODBER, Clerk of the Council.

Shirehall, Shrewsbury, 16th December, 1944.

NORTHAMPTON GENERAL HOSPITAL. (408 Beds.) Applications are invited immediately from registered medical practitioners, Male and Female, for the post of HOUSE SURGEON (A) to the Ear, Nose, and Throat Department. Salary at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications, stating age, qualifications, and nationality, and accompanied by copies of 3 recent testimonials, should be sent to: GORDON S. STURTRIDGE.

NORTH CAMBRIDGESHIRE HOSPITAL, Wisbech. Applications are invited from registered medical practitioners, including practitioners within 3 months of qualification and liable under the National Service Acts, for appointment of HOUSE SURGEON (A), vacant January, 1945. Appointment will be for period of 6 months. Salary £200–£250, with full residential emoluments.

Applications should be sent to the Secretary.

PUBLISHED by the PROPRIETORS, THE LANCET LIMITED, 7, Adam Street, Adelphi, in the County of London.
Printed by HAZELL, WATSON & VINEY, LTD., London and Aylesbury—Saturday, January 6, 1945.
PRINTED IN GREAT BRITAIN—Entered as Second Class at the New York, U.S.A., Office.

THE PRINCE OF WALES'S HOSPITAL, Plymouth. Applications are invited from registered medical practitioners for the appointment of CASUALTY HOUSE SURGEON (A) for duty at the Devonport Section, vacant immediately. Salary is at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

ARTHUR R. CASH, General Superintendent.

Head Office, Greenbank-road, Plymouth.

THE PRINCE OF WALES'S HOSPITAL, Plymouth. Applications are invited from registered medical practitioners for the appointment of HOUSE SURGEON (A) for duty at the Lockyer Street Section, vacant immediately. Salary is at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months. ARTHUR R. CASH, General Superintendent.

Head Office, Greenbank-road, Plymouth.

THE PRINCE OF WALES'S HOSPITAL, Plymouth. Applications are invited from registered medical practitioners for the appointment of HOUSE SURGEON (A) for duty at the Greenbank Road Section, vacant 13th January, 1945. Salary is at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months. ARTHUR R. CASH, General Superintendent.

Head Office, Greenbank-road, Plymouth, 20th December, 1944.

NOTTINGHAMSHIRE COUNTY COUNCIL. County General HOSPITAL, WORKSOP. Applications are invited from registered medical practitioners for the appointment of RESIDENT SURGICAL OFFICER (B1), vacant immediately. Applicants should have held house appointments and had surgical experience. The salary will be at the rate of £350 p.a., with £75 p.a. in lieu of emoluments. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Applications, with copies of 3 recent testimonials, should be submitted forthwith to the County Medical Officer, Shire Hall, Nottingham. K. TWEEDALE MEABY,

Shire Hall, Nottingham. Clerk of the County Council.

COUNTY BOROUGH OF DEWSBURY. With the consent of the Minister of Health, applications are invited from registered medical practitioners (either sex) for the appointment of TEMPORARY ASSISTANT MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER. The salary is £500 p.a., rising by annual increments of £25 to a maximum of £700, plus present cost-of-living bonus. In fixing the commencing salary, the Committee will consider previous experience.

Further particulars, and application form, may be obtained from the Medical Officer of Health, Municipal Buildings, Dewsbury, to whom completed forms should be returned as soon as possible.

Town Hall, Dewsbury. HOLLAND BOOTH, Town Clerk.

HULL ROYAL INFIRMARY. The Managing Committee invite applications for the post of TEMPORARY HONORARY SURGEON from candidates possessing the qualification of F.R.C.S. The Senior Honorary Assistant Surgeon is a candidate for the post and in the event of his appointment the Committee will proceed at the same meeting to consider applications for the post of TEMPORARY HONORARY ASSISTANT SURGEON from candidates with the F.R.C.S. qualification. Both appointments will continue during the present war period and will terminate at the conclusion of hostilities.

Applications should be addressed to the Chairman of the Managing Committee and should reach the Hospital by 22nd January, 1945. R. J. CARLESS, House Governor.

SURREY COUNTY COUNCIL. Cumberland House Hospital, Whitford-gardens, MITCHAM. (100–110 Beds.) Applications are invited from registered medical practitioners for the appointment of RESIDENT MEDICAL OFFICER (B1) at the above Hospital. The officer appointed will be responsible to one of the Council's non-resident Chest Physicians who is Medical Officer in charge of the Hospital. Applicants must have had experience in the diagnosis and treatment of pulmonary tuberculosis. The officer appointed will be required to give A.P. refills both at the Hospital and at several clinics of the County Council. Salary at the rate of £550 p.a., plus £50 p.a. allowance for certain administrative duties, plus full residential emoluments valued at £125 p.a. (or cash in lieu thereof if non-resident). The appointment is available for the further duration of the war and is subject to 1 month's notice on either side. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Apply to the County Medical Officer, County Hall, Kingston-on-Thames, by 17th January, 1945.

NORFOLK AND NORWICH HOSPITAL, Norwich. Applications are invited from registered medical practitioners for the appointment of HOUSE SURGEON (A). Salary is at the rate of £170 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications to be addressed to—

FRANK INCH, House Governor and Secretary.

DONCASTER ROYAL INFIRMARY. Applications are invited from medical practitioners (Male or Female) for the appointment of HOUSE SURGEON (A). The appointment will be for 6 months. Salary £175 p.a., with full residential emoluments. This large industrial area offers excellent opportunities for gaining experience. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply.

Applications, accompanied by not more than 3 testimonials, to be sent immediately to—

R. LANCASTER, Secretary-Superintendent.

WOLVERHAMPTON AND MIDLAND COUNTIES EYE INFIRMARY. Applications are invited from registered medical practitioners, Male or Female, for the appointment of RESIDENT SURGICAL OFFICER (B1) (Registrar), now vacant. Applicants should have held house appointments and had ophthalmic experience. Salary commencing £400 p.a. There are 80 Beds for in-patients and a large out-patient department. The Infirmary is recognised as a hospital at which the full course of instruction for admission to the D.O.M.S. may be taken. Suitably qualified R and W practitioners holding B2 appointments, also those now holding B1 and rejected by the R.A.M.C., may apply.

Applications should reach the Secretary as soon as possible.

EUSTACE LEES, Secretary.

BOURNEMOUTH. ROYAL VICTORIA AND WEST HANTS HOSPITAL. Applications are invited from registered medical practitioners, Male and Female, for the following appointments:—

RESIDENT MEDICAL OFFICER (B2), vacant 1st February. Salary at the rate of £250 p.a., with full residential emoluments. R and W practitioners who now hold A posts may apply.

HOUSE SURGEON (A), 4 vacancies, available 1st February (2), 8th and 17th February. Salary £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply.

Appointment in each case will be for a period of 6 months.

Date for commencement of duties can possibly be arranged earlier if desired. GORDON M. SAUL, Secretary.

HUDDERSFIELD ROYAL INFIRMARY. (321 Beds.) Resident ANÆSTHETIST AND ASSISTANT CASUALTY OFFICER (A) required to commence as soon as possible. Salary at the rate of £150, with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

CASUALTY OFFICER (B2) required to commence as soon as possible. Salary at the rate of £200, with full residential emoluments. R and W practitioners who now hold A posts may apply, when appointment will be limited to 6 months.

Applications should be sent to—

H. J. JOHNSON, General Superintendent and Secretary.

COMMISSIONER OF PUBLIC HEALTH, Perth, Western AUSTRALIA. Applications are invited under the State Public Service Act for the above position. The Department, in addition to the usual public health functions, controls the management of 25 Government Hospitals, and supervision of 60 other hospitals, the Homes for the Aged and Infirm, and direction of State Medical Services. The Commissioner is the professional head of these activities. The Diploma in Public Health is essential. Salary range £1180 to £1300, plus basic wage adjustment, which at 1st December was £60. The salary quoted is in Australian currency. Further information may be obtained on inquiry.

Applications, stating age, qualifications, and experience, close in London on 1st February, and should be forwarded, in duplicate, together with copies of testimonials, to the Agent General for Western Australia, 115, Strand, London, W.C.2.

M. F. TROY, Agent General for Western Australia.

SUDAN MEDICAL SERVICE. There are unexpected vacancies for British-born medical Men. Candidates should be under 30 years of age and unmarried. Salary commences at £E.720 (approximately £738) a year. Postgraduate experience is essential and preference is given to those who have held B appointments or equivalent posts. The maintenance of the efficiency of the African Medical Services has been generally recognised as a vital contribution to the United Nations war effort and the Central Medical War Committee raises no objection to those selected taking up appointments in the Sudan.

Full particulars may be obtained from Dr. H. C. SQUIRES, Consulting Physician to the Sudan Government, 93, Harley-street, W.1 (Telephone: WEL 3423), who would be glad to see intending applicants at the earliest possible date.

Doctors, Male and Female, required for Locums and Assistantships. Vacancies for Hospital Locums and Ships' Surgeons. Practices and Partnerships for disposal.—Write: A. SHAW, Medical Transfer Agent, Premier Buildings, 88, Church-street, Liverpool.

Whole or Part-time Assistant wanted for Country Practice. Live out. Car provided. Salary by arrangement.—Write: Dr. L. O. LINDSAY, Tavistock, Devon.

Medical Photographs and Drawings for illustrations, records, &c. —Write for particulars: E. O. SONNTAG, 159, Bickenhall Mansions, Baker-street, W.1. WELbeck 8880.

Required pre-war Siemens' Ultra-therm (6 metres), good condition.—Details, price, &c., to SMITH'S, 59, Gray's Inn-road, W.C.1. HOLborn 7358.

Microscope wanted for cash—by a good maker, a complete outfit. —Canister Lodge, Forty Hill, Enfield, Middlesex.

Zeiss Epidiascope, mahogany, Tessar lens, water-cooled arc, all mechanical movements—an extremely heavy apparatus suitable for permanent installation only. £57 10s.—WALLACE HEATON LTD. (MAYfair 7511—Mr. Cole), 127, New Bond-street, W.1.

Short-Wave Therapy. Revised edition of Fritsch and Schubart's "Introduction to Short-Wave Therapy (Technique and Indications)," with preface by DR. Justina Wilson, now ready, price 21s. From booksellers or: GENERAL RADIOLOGICAL LIMITED, 15/18, Clipstone-street, London, W.1.

Radium: You can hire up to 100 mgms. of radium element made up to any required specification, for the moderate fee of £5 5s. from: J. C. GILBERT, LTD., Columbia House, Aldwych, W.C.2. Tel.: Chancery 6060

Wanted to Purchase: Cameras, Enlargers, and all Photographic Apparatus, Exposure Meters, Tripods, &c., Microscopes, Binoculars, Cine Cameras, and Projectors. Prompt cash and high prices offered.—WALLACE HEATON LTD., 127, New Bond-street, London, W.1.

GLOBIN INSULIN

(with Zinc)

'WELLCOME'

Globin Insulin (with Zinc), 'Wellcome' brand, represents an important advance in diabetic control. It possesses a new type of insulin action with the following characteristics:—

1. Onset of action is rapid and usually begins within two hours after injection.
2. A strong, prolonged daytime effect with maximum intensity during the patient's waking hours.
3. Diminishing action at night beginning at about the sixteenth hour after injection minimises the possibility of nocturnal insulin reactions.

Globin Insulin (with Zinc), 'Wellcome' brand, meets the needs of a large proportion of patients. A single daily injection controls many cases of moderately severe and severe diabetes. Globin Insulin (with Zinc), 'Wellcome' brand, is a clear solution and is comparable to regular insulin in its freedom from causing allergic reactions. Available in two strengths, 40 Units per c.c., 5 c.c. phials 2/4, 80 Units per c.c., 5 c.c. phials 4/5.

BURROUGHS WELLCOME & CO.
(The Wellcome Foundation Ltd.)
LONDON

ASSOCIATED HOUSES: NEW YORK MONTREAL SYDNEY CAPE TOWN BOMBAY SHANGHAI BUENOS AIRES